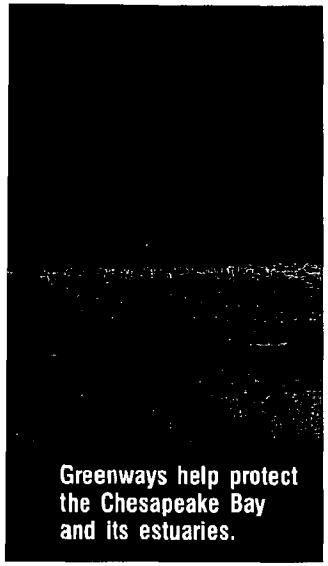
# MARYLAND GREENWAYS...*A Naturally Better Idea*

***Report to the Governor by the Maryland Greenways Commission***

June 1, 1990
Annapolis, Maryland

## Greenways benefit everyone



Greenways help protect the Chesapeake Bay and its estuaries.

From the mountains to the shore, everybody benefits. By linking parks, wildlife areas, historic sites, open space — and protecting watersheds — with a greenway network, the whole really is much greater than the sum of the parts.

Not only do greenways increase environmental protection and recreational opportunities, but they also enhance the quality of life for everyone.

- Greenways provide areas for hiking, biking, picnicking, fishing and strolling.
- Greenways safeguard migratory corridors and habitat for wildlife and waterfowl.
- Greenways serve as traffic-free suburban and urban walkways to and from recreation areas, schools, and parks.
- Greenways protect scenic vistas and landscapes.
- Greenways are places to "get away from it all" in the middle of the city.
- Greenways maintain open space which increases the desirability of adjoining properties.
- Greenways safeguard watersheds, river and stream valleys, vital elements in improving water quality in Chesapeake Bay.

Greenways are a great idea for Maryland today and for our future. Not only do they benefit everyone with added opportunities for outdoor recreation, but greenways also help protect our wildlife and safeguard the waters of the Chesapeake Bay.

William Donald Schaefer

William Donald Schaefer
Governor

**Maryland Department of Natural Resources**
Torrey C. Brown, M.D.
Secretary

### Greenways involve everyone. Learn how you can help. Contact:

**Maryland Department of Natural Resources**
**Program Open Space**
2012 Industrial Drive
Annapolis, Maryland 21401
(301) 974-7231

**County and City**
**Recreation and Park Departments**

**Save Our Streams**
258 Scotts Manor Drive
Glen Burnie, Maryland 21061
(301) 969-0084

**Chesapeake Bay Foundation**
162 Prince George Street
Annapolis, Maryland 21401
(301) 269-8816

**The Conservation Fund**
**American Greenways Program**
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1800 North Kent Street
Arlington, Virginia 22209
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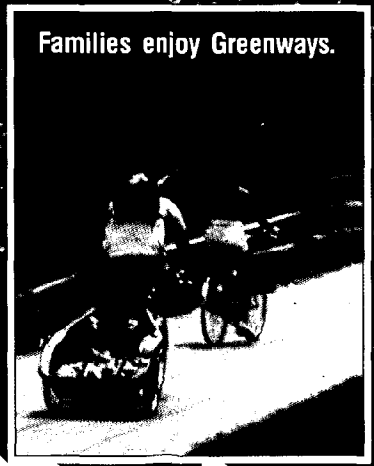
STATE OF MARYLAND DEPARTMENT OF NATURAL RESOURCES

ONE MILLION MARYLANDERS FOR THE BAY
**Restoring The Chesapeake**



# GREENWAYS

## A naturally better idea for Maryland



Families enjoy Greenways.

# Maryland's conservation tradition

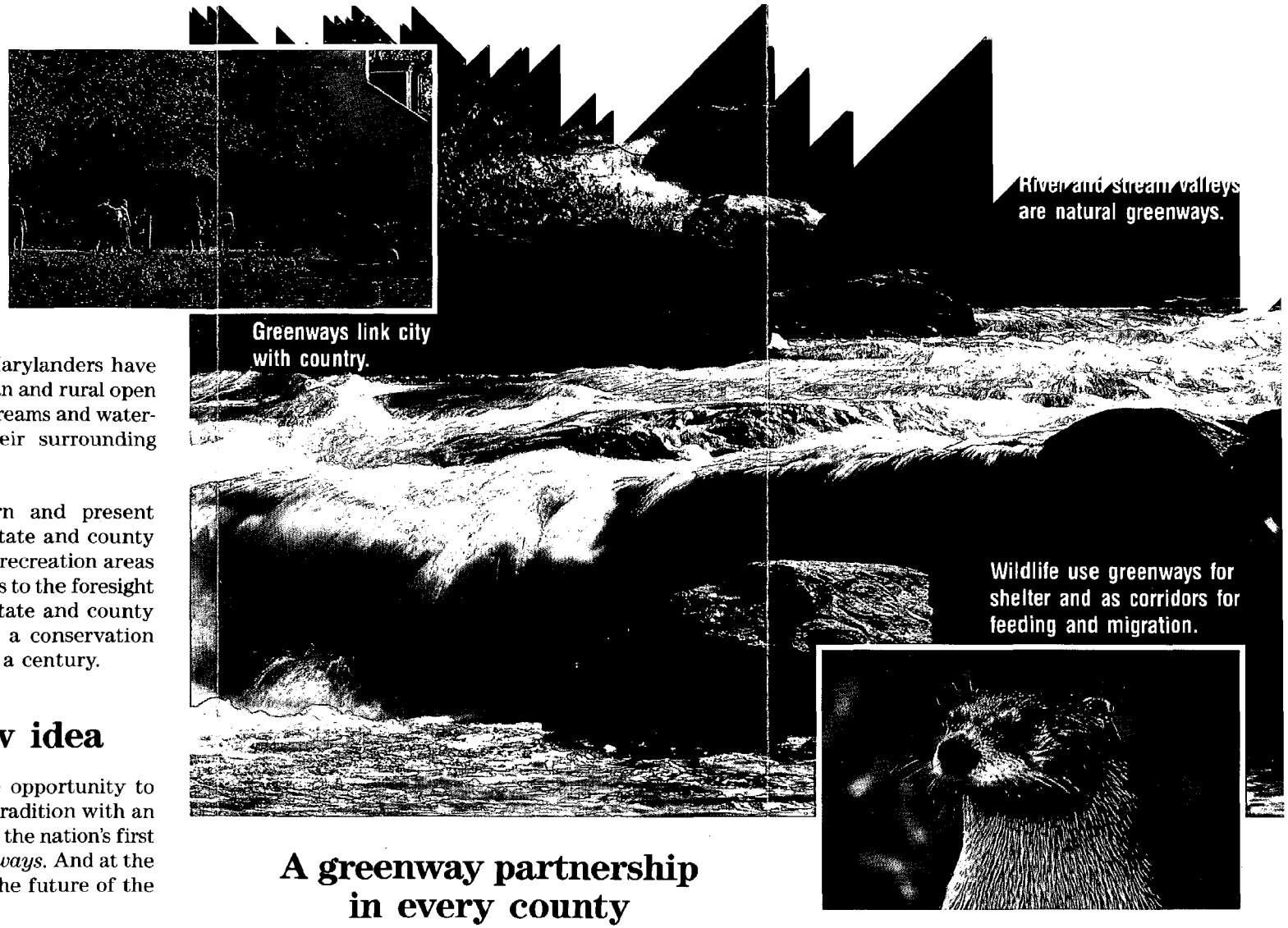
For over eight decades Marylanders have worked hard to protect urban and rural open space, to safeguard rivers, streams and waterways and to preserve their surrounding watersheds.

Because of past concern and present efforts, we enjoy federal, state and county parks, refuges and outdoor recreation areas throughout our state. Thanks to the foresight of citizens and leaders in state and county government, Maryland has a conservation tradition that spans nearly a century.

## Exciting new idea

Today, we have a unique opportunity to continue our conservation tradition with an exciting new idea — creating the nation's first statewide network of *greenways*. And at the same time — help protect the future of the Chesapeake Bay.

Greenways are corridors of open space connecting separate recreational, cultural and natural areas. Some greenways are publicly owned; some are private. Some are open to visitors, others are not. Some appeal to people; others attract wildlife. And because undeveloped greenways frequently follow waterways, they trap pollution that would otherwise flow into rivers, streams and the Chesapeake Bay.




## A greenway partnership in every county

Creating the new network means forming bold, new partnerships in every city and county. Individuals, businesses, city, county and citizens organizations will need to work together.

From the woodlands of the Allegheny Mountains to the wetlands of the Chesapeake Bay, greenways are a naturally better idea for Maryland.

## From the Alleghenies to the Atlantic

Although the idea is new, greenways come in many familiar forms. Rock Creek Park in Montgomery County, the Appalachian Trail, the C&O Canal, Gunpowder Falls State Park, Anne Arundel County's Baltimore and Annapolis Trail are all greenways.

Maryland Greenways Commission.

REPORT TO THE GOVERNOR
BY THE MARYLAND GREENWAYS COMMISSION



# MARYLAND GREENWAYS

## *...A Naturally Better Idea*

*Cover photo by Shawn Clotworthy*

June 1, 1990
Annapolis, Maryland

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# *Maryland Greenways Commission*



June 1, 1990

The Honorable William Donald Schaefer
Governor
State House
Annapolis, Maryland 21401

Dear Governor Schaefer:

The Maryland Greenways Commission has worked hard and enthusiastically over the past few months, and we are now honored to submit our report to you for review and comment.

We found that Maryland's land preservation and open space system for corridor protection is impressive, and our ability to do even more is beyond our greatest expectations. The infrastructure that exists for a Statewide network of greenways provides a foundation for what would certainly be an immeasurable gift to future generations.

A greenway network will not only serve to protect our valuable natural resources, but will also provide Marylanders with access to outdoor recreation and enjoyment close to home. It will build partnerships among private enterprise, government agencies, and the general citizenry, while encouraging local pride. It will also diversify and strengthen our local economies and life styles.

Numerous government agencies, not-for-profit organizations, and private businesses already have existing programs that can be pulled together with strong and imaginative leadership to implement this program immediately.

More important, we have found that the private sector and the citizens of the State are enthusiastic and eager to help. Everyone with whom we talked, everywhere we went, is excited about this idea. We have also found that the rest of the Country is watching us and is anxious to follow our lead. A major outreach campaign is needed to enhance awareness and stir these people to action.



*2012 Industrial Drive, Annapolis, Maryland 21401 — Phone:*

Thank you for giving me this opportunity to serve as Chairman of this Commission and for surrounding me with dedicated people to complete this report in a timely fashion. We look forward to proceeding into the next phase of work as outlined and would appreciate your comments and direction for proceeding on this task.

Sincerely,

O. James Lighthizer, Chairman
Maryland Greenways Commission

# Executive Summary

Maryland is embarking on a bold adventure. The Old Line State will soon pioneer the Nation's first statewide greenways network.

The State's heritage of protected river valleys forms the underlying infrastructure of the new system of interconnected recreation trails and wildlife corridors. Additional threads include the Appalachian Trail and other ridgeways, the C&O Canal and other waterways, and the B&A Trail and other railways. In fact, Maryland enjoys a wealth of streams, wetlands, barrier islands, ridgetops, pathways, utility rights-of-way, and abandoned railroad beds that can be woven into the emerging web of greenways.

The benefits of greenways are clear: a natural filter system for trapping pollutants before they reach Chesapeake Bay; a buffer zone for improving the quality of water throughout the State; a rapid expansion of recreational opportunities for a burgeoning population; a safety net providing cover and passage for endangered species; a geneway for the enhancement of biological diversity; an outdoor classroom for teaching the history of the State and the ways of the environment; and a tangible enhancement of property values and an intangible improvement in the quality of life.

Maryland enjoys a full complement of tools for pulling together the greenways network. Legislative approval of the Governor's proposal to uncap funds for Program Open Space means a significant acceleration of land acquisition is now possible. With the proper focus and dedication, an extraordinary array of Federal, State, and local agencies and authorities can be marshalled and brought to bear on the making of the greenways network. At the local level alone, available tools include registries, dedications, plans, regulations, and a variety of incentives. Finding a State agency without potential greenway responsibilities is difficult. In the Federal Government, the key agencies are the U.S. Fish and Wildlife Service, the National Park Service, the National Oceanic and Atmospheric Administration, and the Environmental Protection Agency. Foundations, nonprofits, utilities, corporations, private developers, land trusts, and civic organizations can also play pivotal roles.

The public at large has already demonstrated its overwhelming support for the greenways network. Maryland is ready for the adventure to begin.

# MARYLAND GREENWAYS COMMISSION

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# ACKNOWLEDGEMENTS

The preparation of this report was made possible through the cooperation and assistance of many individuals and organizations who banded together for a common cause. All recognized greenways as an opportunity to preserve natural habitat, protect open space, and contribute to Maryland's quality of life. The greenways network can truly become a reality with a continuation of our team effort. I am pleased to acknowledge some of the key people and organizations without whose assistance this report could not have been researched and written.

First and foremost, I would like to thank Governor William Donald Schaefer without whose leadership and vision this Commission and report would not have come to fruition. I also would like to personally thank the Governor for giving me the opportunity to chair a Commission which could change the face of Maryland and, indeed, set an example for the Nation. The ambitious schedule which the Governor set for us reflects the importance of the greenways concept for preserving our valuable natural resources.

*The Commission Members.* Sincerest thanks to the 20 Commission members who so graciously volunteered a great deal of time from their busy schedules. The schedule which was set called for them not only to attend bi-weekly meetings, but also to work as committees within the Commission. These committees worked in the interim to garner the information needed for the formulation of this report. I am especially grateful to the committee chairmen who took it upon themselves to organize and lead these working committees. They invested a great amount of time, energy, and professional skills in completing their missions in a timely fashion.

*The Department of Natural Resources.* Secretary Torrey C. Brown encouraged the greenways concept and brought it to the Governor's attention. The Department of Natural Resources not only provided the professional skills for scheduling the announcement, but made this effort a priority for all of the Department. We are especially grateful to Dr. Brown for providing staff to this effort.

*The Conservation Fund.* Patrick F. Noonan, President, served to advise the Commission and invested a considerable amount of time and effort to this initiative prior to and during the Commission's work. His guidance, as well as that of his staff, is greatly appreciated. The Conservation Fund's program, Greenways for America, was the incentive which propelled this action forward in the State of Maryland.

*The Chesapeake Bay Foundation.* William C. Baker, President, and Vice-Chairman of the Maryland Greenways Commission, provided expertise and facilities for meetings, workshops, etc., and lent staff for assisting in the preparation of this report. His availability and consultation contributed considerably to this report.

*The National Geographic Magazine.* Gilbert Grosvenor, President and Chairman of the Board, provided support for our greenways effort. He took time from his responsibilities with National Geographic to meet with our staff, the Maryland Greenways Commission, and Governor Schaefer.

*Morgan State University.* Its School of Landscape Architecture assisted the Department of Natural Resources in preparing preliminary reports during the initial stage of this project using Anne Arundel County as a model for greenways. They prepared valuable case studies and important inventories.

*The National Oceanic and Atmospheric Administration.* Through a grant administered by the Department of Natural Resources' Coastal Resources Division, NOAA made funds available for the preliminary stage of this project for reports, brochures, and a slide presentation. NOAA continues to assist in funding for this and upcoming phases of this program.

*Anne Arundel and Howard Counties.* These Counties assisted in the funding for staff for this project.

Throughout the course of the preparation of this document, various representatives of Federal, State, and local governments supplied invaluable support and information and encouraged me with the prospects of their continued support as the greenways initiative continues.

Many thanks to those private organizations, conservation groups, park and recreation groups, utility companies, and others without whose assistance and enthusiasm we could not have continued. Responses to questionnaires, meetings, and on-going daily contact assured me on a daily basis that this was a worthwhile effort and that my time was being well-spent

O. James Lighthizer
*Chairman*

# INTRODUCTION

Maryland is a land of fertile valleys and serene rivers, of rolling mountains and lush marshes, of sandy beaches and thick forests. At the heart of the region is the Chesapeake Bay, a resplendent estuary teeming with plant and animal life.

Located along this varied landscape are corridors of green. Many of these corridors over the years have been protected by Federal, State, or local governments, thereby putting in place a framework for an extensive greenways network that could become the model for the nation.

The protection of greenways is perhaps the greatest single contribution that the citizens of today can make to those of tomorrow. The commitment of the people of Maryland to continue preservation and protection of the remaining natural environment is a commitment to the quality of life itself, both now and for all time.

Faced with undeniable evidence that America's green commonwealth is being overwhelmed, the President's Commission on Americans Outdoors made the following proposal in 1987: "We have a vision for allowing every American easy access to the natural world: Greenways. Greenways are fingers of green that reach out from and around and through communities all across America, created by local action. They will connect parks and forests and scenic countrysides, public and private, in recreation corridors for hiking, jogging, wildlife movement, horse and bicycle riding. If the creativity and enthusiasm and love of the land of Americans are truly unleashed, greenways will link our communities coast to coast, from 'sea to shining sea.'"

Greenways are not really new. In Europe, their antecedents go back to the hunting and fishing preserves and royal highways of medieval kingdoms, the landscaped gardens and estates of 18th century England, and the elaborate boulevards, promenades, and greenbelts of more recent times.

In the United States, particularly the Baltimore-Washington area, planners had the foresight to lay out park systems to preserve the stream valleys that lined the piedmont country. With their varied, natural, and "self-contained" landscapes, they were logical places for parks in the expanding cities. These plans, completed in the early 1900's by the McMillan Park Commission in Washington and Olmsted Brothers in Baltimore, form the foundation for a Maryland Greenways Network. The Olmsteds, in their report to Baltimore City, stated, "From the landscape point of view, it frequently happens that a great deal of charming scenery is to be found along the stream; the water itself is interesting, the trees along the stream banks are apt to be numerous and well-developed, and the valley landscape is generally self-contained and full of interest. Moreover, it is generally true that the lowlands are less valuable for other city purposes than the uplands, so that they can be more cheaply purchased, and their withdrawal from occupation interferes less with the productive occupation of the land."

Maryland's greenways evolved from this foresight in planning, judicious use of financial resources, and an ever-present conservation ethic. They laid the framework for what has become one of the best park systems in the United States. Unfortunately, the recommendations were not fully

implemented.

During the intervening years, many levels of government have contributed to the greenways system. The vision of stream valley protection was continued through the U.S. Congress' enactment of the Capper-Cramton Act in 1930, which made available federal funds on a cost-sharing basis for land acquisition along the major stream corridors extending into Maryland from the District of Columbia. This came at a time when the Maryland General Assembly had just created the Maryland-National Capital Park and Planning Commission (Montgomery and Prince George's Counties), which had as part of its charter a plan to protect stream valleys.

State, Federal, and local governments implemented acquisition programs that put in place the framework for an extensive Statewide greenways network. Since its inception in 1965, the Federal Land and Water Conservation Fund has granted $63 million to Maryland. This was matched by an equal amount to acquire and develop outdoor recreation and conservation areas for both state and local governments in every Maryland county.

State and local government programs were greatly enhanced by the Maryland General Assembly's enactment of the "Outdoor Recreation Land Loan of 1969," generally known as Program Open Space. This innovative program has made available over $300 million for acquisition of outdoor recreation and open space lands over the past 20 years. The 1990 Maryland General Assembly, with the support of the Governor, passed into law a bill that will, over the next six years, increase the annual funding for this program from $39 million to approximately $100 million.

# FACTS ABOUT GREENWAYS

## GREENWAYS:

Greenways are corridors of open space that follow streams, ridgetops, rivers, or other linear features for recreation and conservation purposes.

## BACKGROUND:

Maryland has in place the framework for an extensive greenways network. The C & O Canal, the Appalachian Trail, Patapsco Valley State Park, and the lower Pocomoke River are all greenways. Trail systems like the Northern Central Railroad Trail and Anne Arundel County's B & A Trail are recreational greenway connectors. Some greenways are local and urban in character such as Salisbury Park, Frederick's Baker Park, and Baltimore's Gwynns Falls Greenway. Greenways can be publicly owned and provide recreation opportunities or privately owned and provide wildlife habitat and water quality enhancement.

## BENEFITS:

RECREATION: Recreational greenways provide trails for strolling or bicycling. Ball fields and playgrounds may be incorporated into the greenway, as may amphitheaters, nature centers, and other educational facilities.

WILDLIFE: Greenways establish protected areas of natural vegetation for wildlife. Many of Maryland's endangered species live in greenways. Natural corridors also provide migratory paths that permit animals to travel throughout the greenway network. By linking together large natural areas, greenway corridors enhance natural diversity.

WATER QUALITY: By providing forest buffers to streams, greenways purify runoff and remove silt and excess nutrients before they reach the stream. Trees along streams or rivers shade the water and keep it cool, enhancing fish habitat. By protecting streams and watersheds, greenways play a big part in cleaning up the Chesapeake Bay.

EDUCATION: Greenways contain important cultural, historical and natural resources and offer associated educational opportunities.

ECONOMIC: Greenways improve the quality of life and enhance property values. Greenways provide alternative commuter routes by connecting residential areas with businesses and schools.

Maryland has more than 300 miles of greenways already protected, but the network is incomplete. As the State continues to develop at a rapid rate, it becomes increasingly vital that we fill missing links and complete Maryland's greenways network.

# TYPES OF GREENWAYS

Greenways can be created in many types of terrain. The common greenway feature is linearity--they are all corridors of some type. They all go somewhere. In Maryland, some are based on natural features with a linear character: streams, ridges, coastal wetlands, barrier islands. Others are man-made corridors, usually associated with the rights-of-way of utilities or transportation facilities.

## Stream Valleys

Over many years, the State of Maryland and its local governments have been setting aside stream valleys for public open space, both through acquisition and through dedication during the land-subdivision process. Stream valleys form the heart of some of the most-used State parks, like Patapsco, Gunpowder, Swallow Falls, and Seneca.

Surveys of various interest groups, completed for the Greenways Commission, showed that stream valleys are considered by many to be the most important elements in a greenways network. Besides the C&O Canal National Historical Park in the Potomac River Valley, names like Patuxent, Conococheague, Youghiogheny, Manokin and Monocacy were listed by respondents, indicating the importance of these rivers to the people who live near them. Survey respondents also listed stream and watershed protection and wildlife habitat among the important benefits of greenways. Recreation was the third benefit most often cited.

Parks can be designed around stream valleys where light trail use can connect with more active recreational areas. In some valleys not currently protected as parks, the basis for a trail may exist along a sewer right-of-way or abandoned railroad bed, since these two uses also have gravitated to stream valleys. Where a stream valley park is located in a densely settled area, it provides an important recreational resource close to where people live. In some cases, stream valley greenways also support boating activities like canoeing or rafting; in almost all cases, they support fishing and wildlife observation. Indeed, a major function of stream valley greenways is to provide for migration of wildlife.

Not all stream valleys can be used appropriately for recreational pursuits or even for general public access. Some stream valleys are very small, little more than drainage swales meandering through developed areas, and general access could interfere with private uses. Others contain natural resources that could be damaged by human access. Simply leaving a stream to nature's care may be the best prescription in some cases. Recognizing important natural values with a greenways designation may help to keep human interference to a minimum.

Inclusion of nonrecreational stream valleys into a greenways network can serve other environmental and community development goals. Floodplains are best left undeveloped as a means of protecting both life and property. Undeveloped floodplains can also help define and separate urban land uses and provide buffers and visual relief in the urban landscape.

Valuable wetlands are often associated with stream valleys, while naturally vegetated

buffer areas serve an important water-quality function. In any serious clean-up of Chesapeake Bay, protection and enhancement of Maryland's rivers must play a role, since over 90% of the State's rivers feed into the Bay.

## Coastal Wetlands

For a relatively small State, Maryland is blessed with an abundance of tidal wetlands. Mostly marshlands, they are protected by State law and the Federal Coastal Zone Management Act. These strong regulatory protections, coupled with a general unsuitability for agriculture, industry, or development, have protected tidal wetlands from many of the ravages that have afflicted drier uplands.

Constituting the interface between land and water, tidal wetlands are marginal in more ways than one. Half land and half water, they fringe most of Maryland's coastline, forming a band thousands of miles long and comprising tens of thousands of acres. Within this maze of twisting channels and lush marsh meadow, an incredibly complex and rich cycle of life has continued for millennia.

Tidal marshes are the nurseries for the oceans and for the Chesapeake Bay. Here life is reborn year after year in great abundance. The bounty of the marshes guided the patterns of settlement on Maryland's Eastern Shore, and the harvest of the marsh forged the traditions of the tidewater. In offering up a bounty of seafood, game and waterfowl, the tidal wetlands of the Chesapeake have fostered Maryland's unique and world-renowned cuisine, from roasted duck to crab cakes.

Maryland's tidal wetlands remain largely intact, but they have been chipped away over the years. During the 1920's and 1930's, marshland was grid-ditched to drain off water and stop the breeding of mosquitos. Many marshes have been used as pasturelands and it is not unusual to find the remains of barbed-wire fences in tidal wetlands far from any modern agricultural area. The tidal marsh has been used as a dump for dredge spoil and household waste, and marshes have been cut, channelized, impounded, and burned over the years in a series of attempts to "improve" them, as if their natural condition were somehow inferior. But coastal wetlands have refused to be tamed and continue to function, though under greater stress. Filtering, cleansing, and nourishing the Chesapeake, Maryland's tidal wetlands have survived to remain one of our most precious natural landforms and an important component of our greenways resource.

## Barrier Islands

Barrier islands are long, narrow sand ridges that form an offshore chain along much of the eastern coast of North America. The most important characteristic of barrier islands is their dynamic nature. They are a land in motion, formed and erased at the whim of wind, current, and tide. Barrier islands change from moment to moment in an endless, seemingly random evolution.

In geologic time, a barrier island is a mere flash in the pan. As our planet undergoes cyclic warming and cooling, sea levels rise and fall by hundreds of feet, creating new land features and destroying the old. Today's landscape reveals the remains of barrier island dune systems miles inland from existing shorelines. Offshore, the immense sand bars that once marked the interface between land and water await another age when they will again rise from the oceans.

Barrier islands have four major divisions:

the sandy beach; the fore-dune or primary dune line; the dune-and-swale system; and the back-bay. While these ecological types remain roughly distinct over the life of the island, their positions and size are dynamic. Their constituent materials are constantly moving from the beach to the dune and into the back bay, so that the island is constantly rolling landward.

The inconstant nature of barrier islands makes them difficult places to live. Men, animals, and plants make special adaptations to survive on them.

For plants and animals, the sandy islands are a brutal, sparse habitat. Sandy beaches are one of the harshest ecosystems on earth. The day-to-night temperature fluctuations are extreme, and the uniformity of the beach offers little variation in habitat and precious few places to hide. Many animals live off the beach and dunes, but they must be exceptionally rugged. Plants must adapt to an environment that is often saltier than the ocean itself and in which there is no substrate remotely like the rich soils of the mainland. As a result of environmental hostility, barrier islands have developed their own unique suite of species, some of which exist in no other habitat.

People are able to use ingenuity and technology to overcome the challenges of life in the dune line, at least on a temporary basis. Seasonally attracted to ocean beaches in droves, seeking fun, sun, and surf, the human species is tempted to build houses and cities on the fragile dune, making life even harder for its native residents. But anything built on land as transient as a barrier island has but a tenuous hold on existence. Sooner or later the sea will reclaim its own.

In Maryland, three quarters of the barrier islands remain in their natural state, providing pristine plant and wildlife habitat. Maryland's barrier islands support concentrations of rare and endangered species. Protected and managed as State parklands and National Seashore, these areas provide quality recreation and educational opportunities. Linear in their very nature, barrier islands were greenways before Europeans arrived to alter the landscape and create other greenway types.

## Ridgetops

Although they occur throughout the State in various forms, ridgetop greenways are most characteristic of Western Maryland, where they dominate much of the topography. Many of the mountains and ridgetops were heavily timbered prior to the turn of the century. Now reforested and still unsuitable for farming or other intensive uses, they have remained in a relatively natural condition. In the central part of the State, ridges divide a largely agricultural landscape; further west they help to give identity to "Western Maryland." As parts of the Appalachian chain, Maryland's ridgetop greenways also provide opportunities to connect to greenways in neighboring States--like other natural greenway types, ridgetops know no political boundaries.

Because they have been inhospitable to human development, ridgetops have remained available for wildlife and provide important habitat and migratory corridors. They often include unusual dry or rocky habitats for rare plants and animals.

Ridgetop greenways offer scenic relief in Central Maryland. They provide the backdrop that gives the verdant valleys much of their special character. Hikers and horseback riders enjoy the trails associated with ridge summits, which also provide rustic camping opportunities for those able to backpack their equipment and supplies. Rock climbing and hang gliding are specialized recreational pursuits that require the exposure offered by some of Maryland's

western ridgetops.

Hikes on ridgetop trails can sometimes be broken by side trips down into friendly small towns. Here bits of Maryland history remain largely intact as a result of the relative isolation imposed by the rugged topography. Important parts of U.S. history may be encountered on some ridgetops, like the Civil War's Battle of South Mountain. The second Washington Monument is also on South Mountain. Sometimes a ridgetop greenway intersects a stream valley greenway, as where the Appalachian Trail meets the C & O Canal near the historic West Virginia town of Harper's Ferry.

## Urban

Recreation close to home and respite from the ordinary urban environment are two functions of urban greenways. Because of the density of development, greenways in urban settings will in many cases be different from greenways associated with stream valleys, wetlands, and ridges in more rural parts of the State. In some cases, they may not even be very green--for example, the City of Frederick's riverwalk along the Carroll Creek flood control project downstream from Baker Park. Even when very narrow, urban greenways help separate and delineate parts of the urban structure, as seen in aerial photographs.

With some exceptions, notably in the city of Baltimore, where remnants of Olmsted's original greenways plan can be found in Gwynns Falls and Herring Run, most green spaces in Maryland's densely developed urban areas are fragments. These pieces can be knit together in a greenways network. The available pieces include public parks, school yards, golf courses, cemeteries and other historic sites, formal gardens and plazas, playgrounds, waterfronts, and cultural facilities like museums and libraries, which are often set in landscaped grounds.

Some natural corridors, like stream valleys, connect urban open spaces with suburban and rural areas. Rights-of-way for electric power or water transmission lines might also serve this function once they leave the urban street network and enter undeveloped areas. Such rights-of-way also offer the potential for landscaping and the development of trails or bikeways protected from competition with automobiles. Nonmotorized access to the country for city dwellers can be provided in this way.

Opportunities to create urban greenways exist in redevelopment and rehabilitation projects, such as that being carried out along the Patapsco river in Sykesville. Streams, once consigned to back yards or to service as drainage ditches, may be rediscovered and highlighted during such projects, becoming a focus for community pride. Removal of vehicular traffic and conversion of a shopping street into a pedestrian area, planted with shade trees and provided with amenities like benches or flower planters, can also be undertaken as part of a redevelopment. Linked to natural greenways, such spaces can help to extend the greenway into the most densely built areas of downtown.

Waterfronts offer additional opportunities for greenways in urban areas, perhaps most famously realized in the redevelopment of Baltimore's Inner Harbor but evident too in such towns as Annapolis, Salisbury, and Snow Hill. Boat access, whether by commercial water taxi or private canoe, can help to tie such areas together in the overall greenways network. Clearing floodplains of ill-planned or flood-damaged development can help create urban greenways.

# The Appalachian Trail: South Mountain Greenway

The Appalachian National Scenic Trail is the longest marked footpath in the world, stretching 2,100 miles from Maine to Georgia along the crest of the Appalachian Mountains. The Maryland segment of the Trail meanders 38 miles along the crest of South Mountain between Frederick and Washington Counties.

The Appalachian Trail, as a greenway resource, is unique in the way it is administered and managed. It involves a cooperative effort among a number of private organizations and public agencies. In Maryland, the trail passes through four State Parks, with the Department of Natural Resources (DNR) designated as the lead on all trail-related matters within the State's jurisdiction. For specific trail maintenance and upkeep issues, responsibility lies with private trail-maintaining clubs that have been established along the entire length of the Trail. The Appalachian Trail Conference (ATC) is an umbrella group of the trail-maintaining organizations charged with overseeing the activities of the clubs. In Maryland, the Potomac Appalachian Trail Club takes the lead on all trail maintenance matters.

The trail enters Maryland from the north at Pen Mar, a Washington County park, and leaves South Mountain at Weverton Cliffs, entering National Park Service (NPS) property at the C&O Canal National Historic Park. The many natural highlights one encounters along the Maryland segment include Raven Rock, Devils Racecourse, Annapolis Rock, and Weverton Cliffs. In addition, South Mountain, a crucial location during the Civil War, has several locales (Fox Gap, Turner's Gap, and Crampton Gap) that combine historic preservation and education with recreation and natural resource protection.

At present, all but six miles of the trail go through four State parks (South Mountain, Gathland, Greenbrier, and Washington Monument). The remainder passes through a number of private properties that have been identified by DNR and the NPS as priorities for protection. With the assistance of the NPS, Maryland anticipates the completion of the Appalachian Trail Protection Project within the next four years. This accelerated land-acquisition program is necessitated by the rapid rate of development in the vicinity of South Mountain and its associated rising real-estate costs.

Permanent protection of the Appalachian Trail and its buffer corridor is important not only to complete Maryland's Appalachian Trail Program but also to further the State's greenway protection efforts. At present the Appalachian Trail is already connected to an existing protected greenway, the C&O Canal. Additional linkages being considered include the Weverton to Roxbury Rail-Trail and a possible connection to the Catoctin Trail.

## Connectors

Although not all connectors are greenways, connectors are essential elements in the greenways network. Connectors are linear spaces often lacking a significant vegetative component that join people with greenways.

Connectors offer wonderful recreational opportunities near homes, businesses, and schools. In fact, they are the places where more and more Americans are pursuing their favorite recreational activities: walking, jogging, and bicycling.

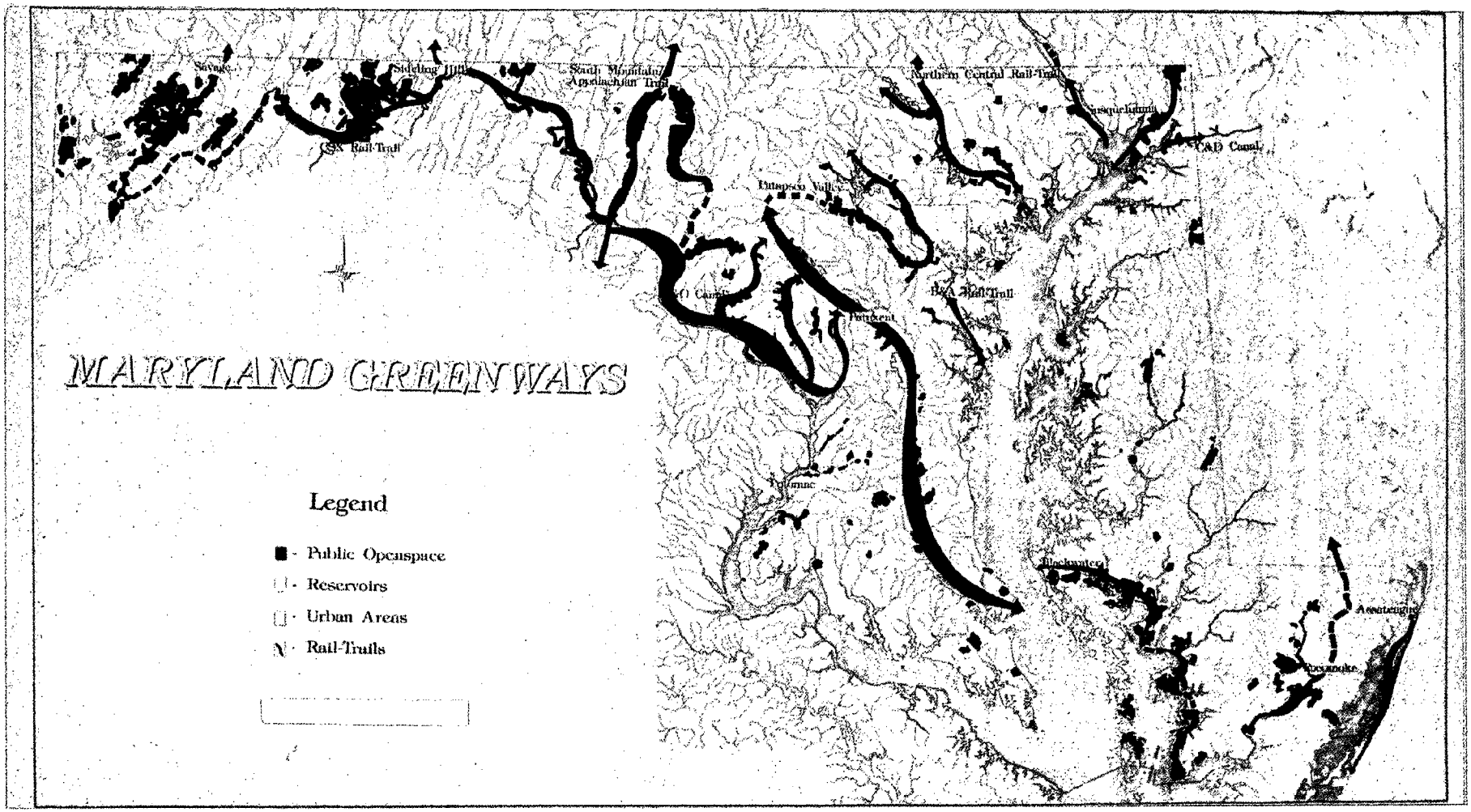
Some connectors, such as canals or abandoned railroads, may be steeped in local history. Old railroad lines frequently had a distinctive style to their stations, such as the Monkton Station on the North Central Railroad Trail. In Southern Maryland, the Chesapeake Beach railroad line was a popular route to the resorts at Chesapeake Beach from the turn of the century through the 1930's. One day it may become popular once again as a travel corridor, this time for bicyclists and hikers from congested suburban areas making their way down through Patuxent Park to the Bay beaches.

Railroad rights-of-way are common connectors in urban areas. Where railroads are no longer in constant use for freight or passenger traffic, their corridors offer potential for landscaping and joint use for walkways and bicycle paths linking recreational facilities or larger parks with one another and with residential, commercial, or office areas. The B&A Trail in northern Anne Arundel County is one example; others are under study in Montgomery, Prince George's, and Anne Arundel counties. Limited use of these corridors for transportation facilities in the future can be compatible with greenway use.

There are only limited opportunities for separate, dedicated rights-of-way for hiking or bicycling trails within the densely developed urban fabric. Outside of stream valleys dedicated to park use and abandoned railroads, which sometimes share the same corridors, connectors are most likely to be found where utilities have required underground or overhead corridors, leaving the land surface available for another use. Most opportunities for connector development in urban areas, however, will be in corridors already developed for some purpose. Walkways and bicycle routes in developed areas might be designated as connectors in urban greenways systems by special paving and the addition of benches, lighting, and landscaping to set them off from nonpedestrian facilities.

Often public utilities extend considerable distances through the landscape. In some cases, these utility corridors, like railroad beds, make fine walking and bicycling trails, serving to link one urban community to another or to a park, recreation area, or rural countryside.

Connectors are the threads of the greenways network that one day may link individual river valley greenways to each other or may allow someone to walk from a ridgetop greenway in Western Maryland to the wild Atlantic greenway of Assateague.


MARYLAND GREENWAYS
Legend
Public Openspace
Reservoirs
Urban Areas
Rail-Trails
Savage
Sideling Hill
South Mountain/Appalachian Trail
CSX Rail-Trail
Northern Central Rail-Trail
Susquehanna
C&O Canal
Patapsco Valley
Patuxent
B&A Rail-Trail
Potomac
Blackwater
Assateague
Accomac

## Greenways--A Network of Open Space Corridors

**Maryland has unique opportunities to complete a whole network of greenways--both to protect its precious natural resources and expand multiple benefits for its growing population. Chances to complete this network are disappearing in much of the State as development pressures intensify and land prices escalate. The time to move forward is now.**

Some greenway types, notably ridgetops and barrier islands, were linear features in the primeval landscape. As such, they functioned as corridors for the migration and dispersal of flora and fauna. But prior to European settlement, Maryland was essentially green; corridors were the exception rather than the rule. The pre-settlement landscape was a series of natural ecosystems that abutted or blended into one another and blanketed the entire region. It was only with the advent of agriculture that these natural systems were pushed back and began to take on linear qualities. The developing, urbanizing landscape consumes productive lands and leaves behind a remnant mosaic of marginal lands isolated in a sea of development.

Isolated ecosystems have a number of distinct disadvantages. When a block of forested land is first separated from surrounding natural land, it contains roughly the same plants and animals as the larger forest of which it was a part. But the species composition of that tract immediately becomes impoverished. Certain species of animals that require a critical minimum acreage for successful reproduction will soon be lost. Because of their stringent habitat requirements, these will be animals that are already absent in other fragmented habitats. Over time, more plants and animals will be lost through a variety of mechanisms.

As the world goes through cyclical climate changes--wet and dry years, hot summers and cool--plant and wildlife populations fluctuate. Within natural systems, all populations regulate and are regulated by each other. Thus a given dry year might have great climatic conditions for gypsy moths, which eat oaks. As a result, oaks have a poor year (or two or three). This means that the next three (or four or five) years will be lean times for squirrels, who need oaks for acorns. Meanwhile, bobcats, who have been well fed in past years with a large squirrel population, are left with little choice but to go elsewhere in search of food, causing a temporary crash in their populations. Such is the round-about nature of forest wildlife population dynamics. Add to the above scenario the immense complexity of interactions, the diversity of creatures and plants found in the forest, and the fact that a new tangent begins with every new event, and it becomes clear that the forest is a constantly changing system whose inhabitants endure boom and bust and must be ready to move to greener pastures when the necessity arises.

In an isolated habitat, a crash in a particular wildlife population can become permanent, setting off a new series of changes. If the area in question is isolated by a superhighway, the act of emigration can have immediate and deadly results, with evacuating wildlife being squashed on the road. If there is no suitable habitat near the

isolated parcel, emigration is impossible and animals are faced with the options of staying put and starving or wandering about in unsuitable areas, like city streets. More importantly, when the adverse conditions that caused the original crash dissipate, there is no contact with surrounding forest that can be used as a corridor for wildlife (or plants) to repopulate the area. The net result is that environmental stress, already compounded by the original fragmentation, can permanently remove species from isolated tracts. In the long run, species diversity within the isolated parcel becomes depauperate and a few common species are all that remain.

The natural landscape contains many habitats, each expanding and contracting as climatic changes occur. When conditions favor one habitat type over another, the favored habitat migrates slowly into the other, the end result being that throughout cool and warm periods, wet cycles and dry, there is always a native habitat complex overlaid onto the landscape. Fragmentation, by reducing diversity and blocking migration, impedes this process. In the long term, as well as over year-to-year cyclic changes, the isolation of natural areas results in an increasingly barren biota.

Connections can enrich isolated areas. Wooded corridors act as lifelines between lands which would otherwise be completely cut off from each other. Wildlife and plants can use natural corridors to evacuate areas that can no longer support them and to repopulate these areas when conditions stabilize. This is the fundamental basis for greenways, at least from a conservation standpoint.

But a number of other advantages can be gained from a network of greenways. The same corridors that ferry wildlife from forest to forest can ferry people from home to work, or from school to play. The people of Maryland want to get out and recreate. That recreation increasingly involves trail-based activities like hiking, bicycling, and horseback riding. As participants in these activities, people like to have a place to go, a destination, whether it is another park, a stream, or the Chesapeake Bay. A recreational greenways network increases their options and access.

In addition to offering trail-based recreation, linear parks themselves go places, bringing the park to more people. This is simply a function of geometry. When natural areas have linear outgrowths into the surrounding community, more people have nearby access.

Consider again the natural landscape in the urbanizing world. Most of the land is covered by housing, agriculture, commercial centers, and transportation infrastructure. Yet a residual natural component is also a kind of infrastructure. Large parcels have been set aside as parks, forests, or wildlife areas. Other areas are in natural cover but will soon be developed for houses or factories. Some areas are unsuitable for most uses and have been left in their natural condition. These include mountain ridges, wetlands, unusual geological or topographic features, and some stream corridors. Planning for the greenways network means viewing all open space as a whole, as a natural-lands infrastructure that must coexist with everything else placed on the landscape.

The following pages identify a number of values in greenways. Each represents an overlay on a map of the greenways network. In some areas, all of these values will coincide. In others only one or a few values will be present. But a greenways network consists of the whole, and the evaluation of the network must take each into account. That is what is really new about greenways. By taking a view that is regional, holistic, and aimed at connections, work can proceed on the entire system, even as it is assembled part-by-part. In a landscape that is rapidly filling with houses, roads, and shopping malls, it is none too soon to complete the natural infrastructure--the greenways matrix.

The point is coming soon when many potential greenways, left unprotected, will be gone forever.

* **The State of Maryland should implement a statewide Greenways Program, with strong local government input, in order that the strengths of a network be available for natural and human values to all citizens of the State.**

* **The Governor's Commission on Growth in the Chesapeake Bay Region to the Year 2020 should integrate a statewide greenways network into its recommendations to the Governor.**

## Quality Environment--Greenways Benefit Natural Resources

**We cannot separate man's actions on the land from what happens to our waters. Greenways offer the best way of protecting our waters, and ultimately the Chesapeake Bay, from what we do on the land.**

As a means of organizing the State's land-preservation and recreation-planning efforts, greenways offer the most effective way of protecting the natural resources Maryland's people consider vital to their well-being. The Chesapeake Bay, the rivers leading to it, their fishery resources, and the State's forest cover and its wildlife are beneficiaries of the corridors in a greenways system. Creation of a greenways network will secure these natural resources for future generations.

### The Chesapeake Bay

The Chesapeake Bay is at the heart of Maryland, both geographically and culturally. The Chesapeake is Maryland's original main street, the single most important influence on the history and unique character of the Chesapeake region. The Chesapeake Bay is the largest estuary in North America and was once the most productive in the world, offering an annual bounty of waterfowl, oysters, crabs, and innumerable fish that has made Maryland a pleasant and secure place to live since prehistoric times.

In recent years, Marylanders have watched with growing concern as the Bay's waterfowl have declined, seafood catches have been dramatically reduced, and the water quality of this once-pristine national treasure has become gravely degraded. A lack of understanding of the effects of unregulated industry and uncontrolled growth has led to increased environmental stress and the slow strangulation of the Chesapeake. But there is a growing awareness of the Bay's plight, and in recent years much has been done to reduce pollution. It is no longer possible to view the Chesapeake Bay as a separate entity, removed from the rest of the State. As Maryland continues to develop at a rapid pace, it is becoming increasingly clear that everything that occurs on the land has ramifications in the Bay.

Greenways protect the Chesapeake, cleaning and purifying the waters that flow into it. Protected river valleys provide food and shelter to wildlife and spawning grounds for aquatic life. The key to life in the Chesapeake Bay lies in the unimaginably complex interaction of land and water, a

delicate balance of factors that have taken millions of years to stabilize. Stream valley greenways protect the places where this interaction occurs, mitigating the effects of man that disturb the natural life cycles of the Chesapeake and could eventually destroy it.

Marylanders now realize that the tiny stream nearby is as much a part of the Bay as its verdant, expansive marshes or its sandy beaches. New laws have been passed to protect the land and the water, and communities are organizing to save the Bay. New regional agreements extend the coordinated clean-up effort to most of the states in the Chesapeake watershed. The degradation of the Chesapeake Bay has slowed, but much remains to be done. By some estimates, Maryland will have to absorb another 850,000 people within the next 10 to 15 years, further stressing the Bay. Little time remains to establish a protective network of greenways on Maryland's streams, but the Chesapeake Bay is simply too important to die.

* **Neighboring states should be approached, through the Executive Council of the Chesapeake Bay Program, to establish greenways.**

### Water-Quality and Fisheries

As Maryland's landscape has undergone dramatic changes since settlement, so the water quality of streams, rivers, and estuaries has undergone drastic changes--usually for the worse. Topsoil has washed off agricultural fields and building projects, silting over aquatic resources and clogging harbors. Excess nutrients like nitrogen and phosphorous have caused oxygen-depleting algal blooms, killing native aquatic grasses, fish, crabs, and other aquatic life. Toxic materials from automobiles and industry have washed into streams and the Bay, disrupting normal aquatic life cycles. The gradual degradation of water quality has resulted in reduced seafood catches, the depletion or extinction of sensitive plants and animals, and water unsafe to touch, much less to drink.

Recently, heightened awareness of these problems has led to new laws and programs to protect watercourses. Industry and municipal waste treatment facilities must now conform to higher water quality standards. Grading and building permits also require special measures to prevent the erosion of topsoil from building activities. However, natural buffers are still extremely valuable for removing sediment, nutrients and toxic materials. A number of programs now require or promote buffers and protect non-tidal wetlands, another important watercourse protection.

Wooded buffers keep stream courses clean through four actions:

- Forest canopy reduces the velocity of rainfall, protecting steam banks from direct erosion.
- Vegetation reduces the energy of surface runoff, which, when slowed, drops suspended particles in the buffer. When the material dropped is inert sediment, it stays in the buffer as a soil component. When it is rich with nutrients, these are used as fertilizer by plants in the buffer.
- Subsurface runoff, which often carries high concentrations of excess nutrients, passes through the roots of buffer vegetation and is absorbed. The buffer plants use these nutrients to accelerate growth, binding them up as leaves and vascular tissues.
- The simple act of shading the streambed can have important benefits to water quality. Shading reduces photosynthetic processes in the stream, curbing the growth of oxygen-depleting algae. Water's capacity for holding dissolved oxygen is directly related to water temperature, so shading increases dissolved oxygen content. High dissolved oxygen levels mean enhanced fisheries and nurture a healthy stream biota.

Nontidal wetlands have similar effect on watercourses. Water is slowed by vegetation

causing sediment to fall out. Nutrients are utilized by plants, which remove them as the water passes through.

The nutrient removal functions of both wooded buffers and nontidal wetlands are vital to the easing of eutrophication. In a pristine natural system, plants deposit detritus into streams, where it is slowly broken down by aquatic animals as it moves downstream. Many nutrients in modern runoff, however, are in simple, inorganic forms that can be quickly utilized by algae. By converting these inorganic compounds into complex chemical forms that require extended decomposition to become available as nutrients, wetlands and wooded buffers return aquatic systems to their natural condition.

* **Stream buffer areas should receive priority for greenways designation.**
* **Greenways planning should include water quality and aquatic biota studies, even if problem sources are off-site.**

**Forest Resources**

*"The forest is as beautiful as it is useful. The old fairy tales which spoke of it as a terrible place are wrong. No one can really know the forest without feeling the gentle influence of one of the kindest and strongest parts of nature. From every point of view it is one of the most helpful friends of man. Perhaps no other natural agent has done so much for the human race and has been so recklessly used and so little understood."*

*Gifford Pinchot*

When Captain Smith first explored Maryland over 350 years ago, the state was covered by forest. It has been said that a resourceful squirrel could travel from the Chesapeake to the Mississippi in the tree tops, so large and extensive was the eastern forest. Early on, the forests of Maryland provided fuel, food, and building materials for homes and ships. The forest was viewed as an inexhaustible resource and used as such. It was also feared as a haven of Indians and "wild men". Clearing for agriculture and expansion of towns and villages continued to reduce the forested acres until, by 1900, less than 50% of Maryland remained forested. Over the past 80 years, forest land has continued to be reduced for all uses, with an average of over 3,000 acres per year lost in the last two decades.

Throughout Maryland the establishment and implementation of Best Management Practices (BMP's) on forest lands and farms is underway. Traditional forest management practices, which utilize the forest to produce fiber and timber, are now incorporating wildlife, recreation, and watershed values and outdoor education into the planning process. Maryland has over 130,000 acres designated as State forest lands, and the various forest-based industries in Maryland own a nearly equal amount of land.

Greenways can co-exist with forest management through wise multiple use and the application of BMP's. Forest can berenewed, recovered, and established as part of any greenways complex. Interest in reforestation, afforestation, and urban tree plantings is increasing across the state. Millions of seedlings and trees are produced in State nurseries and provided to landowners each year. Thousands of acres of new forest are established, yet the gain never equals the loss.

Greenways can aid in new forest establishment and in retention of existing forest lands. The vast majority of forest land in Maryland is privately owned. Over two million acres of woodlands are in ownerships that range from five to 1000 acres. Although privately owned, these wooded lands offer many public benefits. Every acre contributes to cleaner water and air, free range for

wildlife, and aesthetic values. Greenways partnerships with private owners can expand and preserve these shared forest values.

* **Dialogue should be encouraged with, and incentives provided for, large private forest owners to expand opportunities for public recreation on their lands.**

* **Forest cover should be maintained (or planted, where it does not presently exist) on all steep slopes on State- owned lands.**

**Wildlife**

The wildlife that Marylanders enjoy today is far different from that which once roamed over the State. Those species most sensitive to landscape alteration, notably large mammals and birds that require large or diminishing habitats are gone. Our wildlife species are those that adapt well to, even thrive in, disturbed, fragmented habitats. Few Marylanders are aware that bear, elk, wolves, and a startling number of birds, reptiles, amphibians, fish, and uncounted other animals once thrived here. The loss in plant species is even more extensive. Most extinctions and extirpations are due to habitat loss. The decline of species diversity is an ongoing process; eventually, we could be left with only the wildlife that live in parks, alleys, and garbage dumps.

Open space protection is the best response to this trend. Arranging open space in greenways is the most beneficial means of protecting native wildlife. Corridors give continuity to wildlife habitat and prevent forest fragmentation, which can devastate wildlife populations. Greenway corridors allow wildlife a natural highway within which they can migrate to new territories, escape famine, and repopulate restored or recovering habitats. Many wildlife species use greenways for seasonal migrations, and greenways themselves provide important habitat.

Stream valleys, ridgetops, and other linear features protect natural migration routes. They also constitute some of the most important natural habitat types, especially wetlands, a resource that has undergone hard losses. A new awareness of the importance of wetlands and the threats to them has led to regulatory protection that may in the future become an important mechanism for protecting greenway corridors.

* **Wildlife corridors are priority areas for greenways designation.**

* **Large blocks of contiguous natural habitat should be provided to ensure that not all protected area is edge habitat.**

* **Trails through large, contiguous, and pristine habitat blocks should be designed to follow the edges of those areas rather than bisecting interiors.**

* **Wildlife corridors should be a minimum of 12 meters in width wherever possible.**

## Quality of Life -- Greenways Benefit People

**People need greenways --- for recreation, health, transportation, and aesthetic enjoyment. A statewide trail system is the most important recreational opportunity the greenways network can provide.**

Whether people actively use them or passively enjoy them from a distance, greenways offer Marylanders numerous benefits.

The quality-of-life factor is the most far-reaching and pervasive benefit for humans. Greenways enrich lives; they offer respite from the workday world and provide places to learn about the natural world. These ideas were stated in many ways by those responding to questionnaires prepared by the Committee on Recreation, Parks, Cultural Resources, Grassroots and Environmental Education. (The summary of this questionnaire is available in Greenways Commission files.)

A "sense of environmental harmony" is the way one person described the feeling of just seeing a greenway each day. Aesthetics and general environmental benefits were also listed as important. Whether it provides a breathtaking vista, the sound of water lapping against a bank, a glimpse into a world long past, or a walk in the evening with a friend, a greenway enhances the quality of life in both urban and rural settings.

### Recreation

Opportunities for recreation rank very high on the list of reasons people want greenways. Hiking, jogging, bicycling, nature study, birding, fishing and canoeing and horseback riding are activities frequently enjoyed by people in linear greenspaces. It comes as no surprise that people want these opportunities close to home. A Commission survey of Maryland Parks and Recreation Directors made it clear that easily accessible trails and scenic trail connectors between communities are major county needs. Survey respondents urged implementation of the Department's Rails to Trails Study (Dec., 1989). Unlike undisturbed river corridors, abandoned railroad rights-of-way have the additional benefit of not being in sensitive natural areas, so trails can be sited with minimal disruption and can offer easy access even to those with physical disabilities. Light rail corridors may be incorporated in a joint development with a trail system.

There is a large, relatively untapped, constituency among equestrian groups that would support greenways and even assist in trail maintenance. Many in Maryland have horses and use linear park trails on a daily basis. Equestrians are one of the many interest groups that could be encouraged during the outreach phase of the Greenways Program.

Hiking, bicycling, and equestrian trails are not always compatible with each other, or with fragile hillsides or floodplains. Trails need to be designed and built to protect natural resources and accommodate specific uses in appropriate locations.

* **A statewide trail network should be part of the greenways plan.**
* **The State's Rails-to-Trails program should continue to be implemented to enhance the greenways network.**
* **Appropriate fishing access areas should be identified and developed as part of the greenways plan.**

### Transportation

Rails-to-trails projects offer especially good potential as commuter routes, although

other trail systems can also provide this benefit. Maryland's existing rail-trails are indeed used by people going to and from work, both on foot and by bicycle. Opportunities for commuting by trail should be encouraged and publicized as much as possible. The B&A trail, now being completed from Ferndale in Northern Anne Arundel County to Annapolis, runs through many communities and makes local commuting by bicycle a reasonable alternative and a way of avoiding the woes of daily automobile traffic.

**Health**

Trail use, for transportation or recreation, has the important additional benefit of improving physical fitness. Walking, bicycling, or jogging is great exercise. Even more important is the overall sense of wellness that greenways provide.

As the President's Commission on Americans Outdoors points out: "Diverse recreation programs that require people to use their legs, arms, lungs and minds should be available to support the full array of personal health and wellness goals." Wellness is not just related to active use of Greenways; the trees and other vegetation that greenways contain help cleanse the air and moderate temperatures, particularly in urban areas.

**Economics**

Greenways offer economic benefits both in the form of higher property values for private properties located near the greenways and in opportunities for economic activities supporting their use. Examples include equipment sales or rentals, dining and overnight accommodations, and commercial enterprises selling outdoor recreation items.

In large greenways, there may be opportunities for concessionaires. There may also be substantial employment opportunity associated with maintenance and operation and the purchase of equipment and materials. Finally, the contribution of greenways to the environmental quality of an area, which in turn may attract desirable economic development or revitalization, should not be overlooked.

* **The Commission should stimulate development of public-private joint ventures that would complement greenway use.**

**Community Building**

Greenway construction and maintenance can be a community-building project. All aspects can be carried out by private individuals and community groups. Fund-raising, working on legal questions, organizing work teams, participating in workdays, providing services for workers, like food and child care--all of these activities can galvanize a community and generate community spirit. The resulting greenways project, whether it be a new trail, a cleaned-up stream valley, or a planting to encourage wildlife, will belong to the people who made it come about. The construction and clean-up days will be memorable social events in the life of the community.

Recreational greenways can become meeting places for neighbors out for a stroll or a ride. Community involvement will also reduce long-term maintenance and policing requirements, since "owners" tend to take responsibility for their property.

**Cultural and Historical Resources**

Greenways may contain and preserve cultural and historic resources. These can be architectural features, such as railway stations, houses, taverns, mills, and raceways; sites where historic events occurred; or archeological remains of a historic or prehistoric nature. These can be featured in

interpretive programs and help people understand their past. The protection of a greenway may have its genesis in a historic preservation campaign. Alternatively, preservation of cultural artifacts may be an add-on benefit of a project to protect a natural area.

* **Incentives should be provided to groups acquiring and maintaining historic or cultural sites to consider the setting of the feature of interest and to acquire sufficient land to link the site to other greenways.**

**Education**

As The Report of the President's Commission on Americans Outdoors stated so succinctly: "Outdoor education will help create an activated citizenry which is more effective at preserving environmental quality and protecting natural resources." Greenways and outdoor education are linked in important ways.

Many schools are located near greenways, particularly stream valleys, in which teachers already focus some of their environmental education curriculum. In Baltimore County, for example, schools near the Gunpowder Falls have adopted the river and have many school activities relating to it, with special emphasis on water-quality studies. In new school construction, serious consideration should be given to sites that are within safe walking distance of stream valley greenways so that they can be used as outdoor laboratories. An additional benefit is that school parking facilities can be used on weekends to give convenient trail access to the general public. In addition, evening adult education programs can use nearby greenways.

State and county agencies and various nonprofit outdoor education programs can play an important role in environmental education as applied in greenways. One example is found in this State's participation in a national program known as Project WILD and Aquatic WILD, cosponsored by DNR and the Maryland Department of Education. Project WILD is an education program featuring curriculum materials about wildlife and habitats. Project Learning Tree is a similar, somewhat older, program that focuses on the forest ecosystem. The Chesapeake Bay Foundation and other nonprofit groups conduct many popular educational programs. Site visits are often made to greenways as a part of class work, and the nearer they are to the users the better.

Many of Maryland's State and local parks have ongoing environmental education programs. These programs are for diverse audiences, including school groups and the general public, adults, children, and special populations. Environmental educators and park naturalists should all be aware of Maryland's new Greenways Program and asked to assist in developing programs to explain the benefits of greenways. Joint venture opportunities between counties and greenway parks for environmental education can be encouraged. For example, the Maryland Department of Natural Resources and other State environmental agencies are well versed in natural resources facts, while teachers know the techniques of teaching. Such an opportunity for cross-pollenization of skills is being developed in Gunpowder Falls State Park, at the Days Cove Environmental Education and Training Center.

Cultural history is another part of environmental education. Many of our existing river valley parks are rich in history and pre-history, and often these features are discussed in brochures and programs. In the future, trails could be expanded to link cultural features together. One area of great potential is the Patuxent River, where many historical contexts still coexist. A heritage

trail could be developed which would tie together pre-historical, proto-historical and historical elements and culture.

There is a need for tying cultural history and environmental education opportunities together with greenways, perhaps by creating a central clearinghouse for information about where the resources and programs are located. In this way, all entities providing outdoor education programs can begin to coordinate, avoid duplication, and expand where gaps are obvious.

A final connection between greenways and outdoor education is indirect. When people have a greenway nearby, they absorb information about it. A general appreciation can lead to a desire to learn more about it, to understand some of the processes that make the natural world so fascinating. Informal education is extremely important; Maryland must continue to provide opportunities for local, daily contact with the natural world. This conviction is echoed by environmental educators who answered the recent greenways questionnaire.

* **A program with the State and local boards of education should be developed to provide a portion of a greenway for an outdoor laboratory for each school in the State.**

* **A computer-based education program, such as National Geographic Kids Network, should be developed to allow schools to communicate with one another about their greenways.**

* **Water quality monitoring and other weather-related monitoring, such as acid rain, should be incorporated in the computer network.**

* **The linkage between land use and water quality must be stressed in the public education component of greenways.**

# IMPLEMENTING GREENWAYS IN MARYLAND

**State leadership in development of a coordinated plan for a greenways network is a necessary step in order to overcome present fragmentation and duplication of effort. A plan is needed to ensure that a timely exchange of information takes place and that all tools necessary to implement greenways are available to all participants.**

A greenways network in Maryland has over the years evolved out of many different initiatives at all levels of government. For the most part, it has been the inadvertent byproduct of these initiatives, however, rather than an intentional creation. While most of the necessary pieces are in place, responsibility for implementation is fragmented and lacks coordination. Some existing programs could better support greenways creation and development with relatively minor modification; others might require restructuring. Leadership is essential.

Programs are in place at all levels of government--Federal, State and local--and in the private and nonprofit sectors. The programs range from regulation of private action, which has the effect of restricting certain kinds of development through public encouragement of private activity by planning and incentives, to private philanthropic approaches and outright public acquisition and development of greenway components.

Keeping communication flowing among the multiple participants in greenways implementation, and tracking, mapping, and coordinating many varied activities so they add up to a whole that is at least as great as the sum of its parts--these are major tasks for which responsibility has not been assigned nor funding provided.

The following pages describe some of the wide range of tools available--from planning and zoning techniques to outright acquisition. The discussion then focuses on the many possible actors and programs which can contribute to the network in Maryland, from Federal, State, and local government to private corporations, utilities, and nonprofit organizations.

## Tools for Protecting Greenways

### Public Acquisition

Many people compare owning a piece of property to a bundle of sticks, each stick representing a land-use right--to live on it, walk across it, farm it, chop down its trees....each right can be separated from the others and sold at an agreed price.

In fee ownership, the owner holds the entire bundle of sticks and controls the use of the land to the extent allowed by law. Public acquisition of title to the land is the strongest, most permanent form of protection, since owners share the greatest control over what happens on their land. Fee-title can be bought or donated. This is the most appropriate form of protection for the most compelling greenway priorities, or for greenway segments that require heavy public

access. To date, fee simple ownership is the most common approach to public land preservation.

A private landowner can sell or donate certain exclusive land-use rights, or a portion of his "bundle of sticks"; this is usually called an easement. Restrictions in use are legally binding either for a specific period of time, or in perpetuity. Property taxes may be reduced by the value of the donated land-use rights, making this alternative appealing to those who want to retain ownership of land while contributing to the greenways network. In certain cases, less than fee interest is all that is needed to promote greenways creation (wildlife corridors, for example, and water resources protection). Since only certain rights transfer to the easement holder (a government or nonprofit group), the cost can be substantially lower than fee acquisition. Easements can be useful in areas where there is resistance to removing land from tax roles, or where the owner is sincere about managing the land for greenway values.

Purchase of easements alone is rarely adequate in intensively developing areas where the cost of an easement limiting development approaches the fair market value of the property. The flaws inherent in easement use can be minimized by selective use of this tool on less critical greenway segments.

**Registries**

A registry is a roll of important lands whose presence on the list begs for constructive attention. These priority areas must have cleared a rigorous evaluation process. Although registries rarely provide real protection for areas, Federal and State agencies and nonprofit groups use them to monitor lands requiring future protection. Often the current landowner is notified of the importance of his land and asked to protect it voluntarily. As a gesture to cooperative civic-mindedness, plaques can be awarded to the owner. Management expertise may be offered to individual landowners. Examples of registries operating in the State include The Nature Conservancy's Natural Heritage Registry, The Wild and Scenic Rivers Inventory (DNR), and The National Park Service's National Registry of Historic Places and National Natural Landmarks Registry.

* **Important links in Maryland's greenways system should be designated, and landowners of designated areas should be encouraged to tie into the network voluntarily.**

**Dedication**

Dedication provides recognition that certain pieces of land are critical to the State's greenways system. A limited number of parcels are identified in a legally established State system and protected by strong statutory language against condemnation and conversion by private and public interests. Long popular in the Midwest, dedication of significant nature preserves recognizes the highest, best use of natural lands. This technique, which adds a measure of protection to greenways acquired by the State, could be added to Maryland's greenways arsenal in the future.

* **Legislation to establish a dedication system for greenways in Maryland should be investigated.**

**Planning**

Plans are expressions of policy and

desired direction that can be used to guide private and public actions. Local and State agencies in Maryland both can develop and implement greenways plans. State laws and policies related to natural resource protection are often expressed most effectively in local land-use, functional, and recreation plans. Public awareness of plans for a network of greenways can assist developers to plan individual projects to complement the acquisition and development of public open space. Publication and wide dissemination of plans also serves to educate the public and generate support for other actions.

**Regulations**

Regulation is the means by which a public entity restricts what a private owner may do with his land. State regulation, found in many agencies, is largely designed to protect natural resources, while land use regulation, including zoning, is a local function. Both can have the effect of preventing development of some lands, which then become available for greenways, sometimes directly and sometimes following public acquisition.

**Incentives**

Incentives involve a variety of means for inducing private property owners to take actions which allow their lands to become elements of a greenway. Favorable tax treatment, such as farmland assessment provisions or tax exemptions for some lands, as under the cooperative hunting program, are familiar examples of incentives. Incentives in a greenways program can also take the form of public assumption of liability on lands open for public access, public provision of services like policing or maintenance, and provision of technical assistance, such as is common in some agricultural and forestry programs.

## Local Approaches

Greenways systems tailored to a county's needs and resource limits have already made a great difference in forward-thinking localities that have been planning for greenways and acquiring component lands for years. Montgomery and Prince George's Counties, for example, boast an extensive stream valley park system and are now engaged in designing links between those segments. Ecologists help local planners site recreational development at suitable nodes along the corridors. Many other counties have a long history of protecting stream corridors through both regulation of development and public acquisition, which have become the focal points for open-space protection in county master plans.

Maryland has made remarkable progress since 1970 in protecting greenway corridors. Because of these efforts, over 300 miles of protected river corridors reach across the State. Much of the credit for that network, including connections to it, belongs to the counties, as does the responsibility for developing the greenways network further.

In Maryland, land planning is a local issue. State and Federal laws addressing resource development and conservation (critical areas, flood plain restrictions) are implemented locally by professionals with an intimate knowledge of the County's resources. In addition, local protection tools, such as easements, tree-cutting ordinances and revegetation policies, subdivision review, special zoning ordinances, stream valley dedication, tax incentives and penalties, cluster development incentives, landscaping requirements, and construction standards are critically important complements to statewide greenways acquisitions. The concept of transfer of development rights (TDR) has particular relevance for greenways protection;

several Maryland counties have TDR programs in effect.

All of Maryland's local jurisdictions have the basic ingredients for creating a greenways network, though some may have a broader array of tools than others. County interests range from general policy for stream protection to rather explicit recommendations for greenway connections in county master plans. The following review of County master planning, zoning ordinances and subdivision regulations demonstrates the broad scope of resources currently available for greenways planning.

**County Master Plans**

Master plans have been developed by all the counties as a means of coordinating long-term land-use policies and goals. A greenways system within a county can be pre-identified as "infrastructure" and zoned to prevent encroachment before it can be fully protected.

With a few exceptions, even the older county master plans and open space and recreation plans contain the basic policy ingredients upon which to build a Greenways Program. These include policies that call for the preservation or protection of stream valleys, wetlands, forests, farmland, shorelines, marshes, swamps, beaches, and historic and cultural features. Some plans relate these policies to recreation, while others merely note the importance of preserving open space and rural character.

The newer plans, such as Baltimore and Calvert Counties' Plans and Howard County's Draft 1990 Plan, make specific recommendations for greenways networks to tie together local and State parks and other land uses and attractions. Some recent plans have a more narrow greenways focus: Prince George's County focuses on stream valley networks, for example, while Washington County emphasizes the C&O Canal, the Appalachian Trail, and bikeways.

**Subdivision Regulations**

Most jurisdictions have general powers within the subdivision regulations to prevent the disturbance of sensitive environmental areas and require the provision of open space areas in new developments. Many subdivision regulations call for pedestrian links between homes and school sites. In most localities, however, subdivision regulations do not have a specific focus on the uniform or systematic creation of greenways and linkages to public parklands.

One promising approach to using subdivision processes for greenways is illustrated in Baltimore County. Here pre-development conferences are held with local developers who must adjust plans to accommodate greenways elements in the Master Plan. Dedication of easements in cluster developments is encouraged and land is then managed by the Parks and Recreation Department. Subdivision review enforces buffers for water resources, steep slope protection and sensitive habitats.

**Zoning**

Certain types of zoning tools used by local jurisdictions present opportunities for the creation of greenways networks. These include planned unit development zones, cluster zones, comprehensive design zones, and other floating zones, such as the floodplain overlay. The opportunity for creating greenways grows out of the requirement that open space and recreation land be designated on a site or development plan that becomes part of the zoning approval process.

In a state with diverse planning interests and capabilities it is not surprising that there is great unevenness between counties, in both the application of planning and regulatory tools and in the status of open-space acquisition. Some of the unevenness is accounted for by the lack of staff capable of carrying out the analysis or activities

necessary to use the tools. Differences in financial resources clearly play a role.

Some localities have abundant active recreation land, with no policy for sensitive land designation, while others are struggling to increase land suitable for active recreation, or access to the Chesapeake Bay. In some areas the Commission found there may be a conflict between the two desirable goals of preserving agricultural land and preserving forest cover. In cities, land that has been long developed is being redeveloped with a site plan allowing creation of linkages to a local greenway. Many local officials have questions about how and when to develop a greenway. In some areas, greenways resources are managed by such a variety of players that management for long-term health of the resources is nearly impossible. Many developers are mystified as to what is required of them, and yearn for a unified set of regulations for their own planning purposes. All of the localities say they need additional planning, acquisition, and maintenance funding.

* **Appropriate county authorities should formulate and provide assistance to developers for compliance with reforestation and tree-cutting policies.**

* **Floodplains delineated during the zoning, site plan review, or land subdivision processes should be deeded to public or quasi-public organizations to enhance the greenways network.**

* **Counties should indicate bike/hiker paths, wildlife corridors, and safe separate crossings during site plan review and subdivision processes and highway-planning and construction process.**

* **All local zoning regulations should allow clustering and provide for transfer of development rights from designated greenways.**

* **Local jurisdictions should be encouraged to adopt a stream valley protection system such as Baltimore, Montgomery, and Prince George's Counties' programs.**

* **Each local government should be encouraged to implement a Greenways Program that includes a local advisory board.**

## State Programs

Numerous agencies in the DNR, and some in other departments, have roles to play in a statewide greenways system. Some programs are primarily planning; some, regulatory; some, funding. Some provide technical assistance. Some are closely tied to local government programs, and some operate more independently. Some agencies are major landowners and managers, often carrying out functions that, on their face, have little to do with open space or recreation. Shared by all these agencies and programs is the fact that none of them have protection or establishment of greenways anywhere in their statements of legislative purpose.

The following pages focus on those State programs having large potential impacts on a greenways network. Other major land-owning agencies--Departments of Health and Mental Hygiene, Public Safety and Correctional Services, Juvenile Services, and General Services--could usefully evaluate portions of their holdings for greenways applicability. Two of these agencies, Corrections and Juvenile Services, as well as the Military Department, have access to manpower resources that might be applied to particular greenways construction projects.

Various agencies within Maryland's government have been protecting greenways for over 50 years. Although not officially called a "Greenways" program, it has evolved into one. The sheer breadth of State coverage, and the number of actors, suggests the importance of planning and coordination required to develop and implement a coherent statewide Greenways Program. When local and federal participants and myriad private and quasi-public actors are added, coordination becomes truly formidable.

* **Every State agency should designate a Greenways Liaison to the Commission.**
* **State agencies with land management responsibilities should require that best management practices be implemented on their land.**
* **State-owned land currently not in the greenways network should be reviewed for possible inclusion in the system.**
* **Cooperative work programs should be instituted with the Maryland Correctional System, Juvenile Services and Maryland National Guard to use available manpower for greenways projects.**

### Program Open Space (POS)

POS is the State's funding mechanism for acquiring land for forests, parks, wildlife management areas, environmentally sensitive areas, Bay access, agricultural lands, and heritage areas. Program Open Space, administered by the Capital Programs Administration, has been so successful over the past 20 years that it was cited by the President's Commission on Americans Outdoors as the premier way to foster greenways.

POS also acts as a funding source for local subdivisions. This past year, land trusts became eligible to receive grants. By enlisting the service of not-for-profit

organizations, the State can move more effectively to preserve critical pieces of land. Although POS helps to fund easement programs through the Maryland Environmental Trust and Maryland Agricultural Lands Preservation Program, fee simple acquisition is the preferred technique for ensuring complete protection and development control on land used for public recreation. The recent lifting of the POS cap by the Governor and the Maryland General Assembly will dramatically increase annual funding, which will continue to serve as the main financial resource for preserving greenway lands by State and local governments.

According to DNR, a critical 86,400 acres must still be acquired to complete programmed acquisitions for State forests, parks and wildlife management areas. This does not include links between major projects. Furthermore, opportunities to close gaps in existing river valley park acquisition lines are often lost because of inherent slowness in the State acquisition process.

The Commission recognized that although Program Open Space funds would grow over the next several years, they might still be insufficient to complete the acquisition of all critical elements of the greenways network in a timely fashion while still meeting other open space needs. Adding to the pressure on available POS funds is the escalation of real estate prices, particularly in important waterfront areas.

The General Assembly and Governor, sharing this concern, directed DNR, Department of Budget and Fiscal Planning, and the Office of Planning to evaluate the feasibility, consistent with debt affordability, of utilizing some or all of the State transfer tax revenues allocated to Program Open Space to support bond financing, which could accelerate land acquisition. A report on this matter is due by September 1, 1990.

Concern for the adequacy of POS funds led the Private Sector Committee to discuss a number of additional financing mechanisms that might be employed to help implement greenways. These discussions also recognized the need reflected in many comments from local government personnel, particularly, about funding for maintenance, program planning, and administration. Among the tools suggested were tax increment financing, user fees, special tax districts, and various means to leverage POS funds to increase their effectiveness. Further evaluation of funding arrangements remains outstanding.

* **POS should be the major fund source for greenways acquisition.**

* **To be sure that current data are being used, the DNR should thoroughly review State acquisition boundary maps as soon as possible.**

* **Creative means must be found to take care of the land once it comes into public ownership.**

**Flood Management**

The stream valley components of a greenways network are clearly related to the State's interest in reducing flood damage and loss. Stream valleys left undeveloped sustain very little flood damage.

Maryland's approach to flood management includes a grant program administered by DNR's Water Resources Administration. The major emphasis has been on the acquisition and removal of flood-prone structures from floodplains. After a local government recipient of a flood management grant acquires a property and removes the structure, the land must remain as permanent open space, usually in public ownership.

Acquiring and removing floodplain structures is a means of correcting past mistakes in land-use decision-making, as at least one participant in the Greenways Commission's workshop for local government recommended. The flood management grant program is voluntary, however; local governments do not have to participate, and individual property owners certainly do not have to sell their property, even if the local government does participate. There is no State policy on removing structures from the floodplain.

The contributions of this program to establishing and protecting a greenways network have been less than extensive. The program could play a more active role in the re-establishment of floodplains as natural greenways if changes were made in its operation, including integration of flood management plans and local open-space recreation plans as a condition for flood management grants.

Besides changing the flood management grant program, there are other approaches to floodplain management that might be made more effective in establishing and protecting greenways. Some are regulatory. Others relate to land ownership and maintenance responsibilities.

There is presently no uniformity in the ownership and maintenance arrangements for floodplains from one local jurisdiction to another, or even from one floodplain to another within a jurisdiction. Frequently, floodplains that are not turned over to public parks and recreation agencies become orphans, with no one caring for them. Formalizing maintenance responsibility might be facilitated through a greenways designation, and associated education programs could stimulate better stewardship among nonpublic owners. Alternatively, local land trusts might be established to take ownership and caretaker responsibility for floodplains set aside in the subdivision process that are not suitable for public park development.

* **The Flood Management Program should give priority to funding projects which will contribute to expansion of a greenway.**

* **The Flood Management Program should modify its rules and procedures so that it can more effectively contribute to greenways objectives.**

**Scenic and Wild Rivers Program**

The Scenic and Wild Rivers Program, administered by DNR's Capital Programs Administration, was created to serve as the state's comprehensive river planning and conservation program. The program is required to inventory and assess all rivers within the State, and, with the assistance of local citizen advisory boards, to prepare river management plans that emphasize protection, preservation, and enhancement of the

natural, cultural, and recreational resources of those rivers that are designated scenic or wild by the General Assembly. Nine rivers are currently classified in the legislation as scenic or wild and are in various stages of planning: Anacostia River, Deer Creek, Monocacy River, Patuxent River, Pocomoke River, Severn River, Wicomico River (Western Shore), and Youghiogheny River.

The Scenic Rivers Program thus far has completed three statewide inventories evaluating a total of 45 rivers. These provide a comparative analysis of rivers based on their resource value and help identify rivers and related shorelines eligible for inclusion in the program. In addition, the program has assisted in the preparation of a number of river resource studies, including "A Greenway Strategy for Weems Creek," "Gems of the Severn," and "Strategies for the Chester River."

The program is currently working with the National Park Service, other sections of DNR, local governments, and citizen organizations on a greenway concept for the Pocomoke River and an assessment of resource conservation and recreational opportunities along Deer Creek. On the Youghiogheny River, the program has coordinated a recreational capacity study and oversees the Department's land acquisition program. The program also administers State land-use regulations inside the Youghiogheny scenic corridor and assists the Forest, Park and Wildlife Service in the administration of commercial whitewater-rafting regulations.

Given its legislative mandate and its focus on river corridors, the Scenic and Wild Rivers Program is in an excellent position to contribute to the promotion of the greenways concept. The program can provide a measure of protection for river corridors and can provide the necessary technical assistance to develop management plans that promote river conservation. Its planning process brings together local landowners, river users, and government officials to discuss methods of river corridor protection. The program's inventories and studies could be used to identify rivers that should be considered as part of a statewide greenways network. Finally, staff are available to assist local government in efforts to enhance river corridors. In the future, the program hopes to have regional planning representatives statewide.

**DNR Forest Programs**

Within the DNR, the Forest, Park and Wildlife Service provides many forms of assistance to the private and public sectors through its foresters, biologists, and support staff. Some major programs are as follows:

***Green Shores***

Maryland's Nutrient Reduction Plan, developed as a result of the 1987 Chesapeake Bay Agreement, relies heavily on the establishment of vegetative buffers to reduce agricultural and urban non-point source pollution. Green Shores is a tree-planting program created to establish forest buffers along Maryland's waterways. Green Shores provides seedlings and technical assistance to private groups for plantings. Forested buffers along stream banks and other water bodies provide a cost-effective method of waterway protection. Forested buffers do many things: besides improving water quality, they act as a natural air filter; they are a key component in perpetuating the natural circulation of water; they create wildlife corridors; and they absorb rainfall, releasing it slowly into the ground.

***Tree-Mendous Program***

To help Marylanders join the effort to reforest the State, Tree-Mendous Maryland evolved from the realization that, when all the laws to help save the Chesapeake Bay were passed and enforced, we would still face a losing battle unless and until Maryland's citizens change the way they live and treat the land. Trees and shrubs can help us heal

the scars of past abuse and keep us from doing further damage to the Bay.

The basic program is the Gift of Trees. Marylanders are asked to consider buying a tree or trees in honor or in memory of a person or event. Already, over 100 groves have been established throughout the State as lasting memorials.

Tree-Mendous Maryland is reaching out to community groups and schools who want to plant in public spaces that need trees. In Baltimore County, over 250 trees were used by public schools, and, through the local forestry board, 750 trees were planted in median strips, to shield unwanted land uses or to turn grassy abandoned areas into small forests. Montgomery County is using 100 Tree-Mendous trees to help the Keep Montgomery County Beautiful Committee's efforts. IKEA is the first sponsor in a corporate program that allows major tree plantings along State highways.

Tree-Mendous Maryland is working with all State agencies, the Department of General Services, the Department of Health and Mental Hygiene, and the Department of Public Safety and Correctional Services in tree-planting programs. The Department of Transportation may plant tens of thousands of trees throughout the State over the next few years.

*Other Incentive Programs*

To stimulate forestry in Maryland, several other programs are available, including Urban and Community Forestry Assistance, Woodland Incentives Program, and the Forest Conservation and Management Program. From a tax standpoint, there are several State and Federal programs that encourage the planting of trees through tax credits or cost sharing. These include the Maryland State Reforestation Tax, the Conservation Reserve Program, and the Forestry Incentive Program.

* **The various State and local forest programs should be coordinated to emphasize tree planting in greenways.**

**State Highway Administration**

The Maryland Department of Transportation's State Highway Administration (SHA) has the responsibility to assure that the needs of bicyclists are considered in conjunction with maintenance and improvement of State highways. Shoulder construction and surfacing are of particular concern. SHA guidelines suggest planners "take into account available right-of-way, additional project cost, long term maintenance cost, potential bicycle use, local and community bikeway systems and other relevant information."

SHA's policy statements concerning bicycles focus on developing the existing State transportation system for shared bicycle and motor vehicle use while improving bicycle access to this system. The SHA is willing to consider separate bikeways on a limited basis where they may connect existing or planned bikeway systems, but "will strive to make its highways compatible for shared bicycle use rather than designate and mark special bikeways."

The SHA has numerous planning guidelines that allow for coordination with local governments in bicycle transportation planning. A Bicycle Affairs Coordinator is available to assist.

The SHA is responsible for bicycle access across major waterways where feasible, practical and consistent with legal requirements. As the State and counties acquire and develop more and more major hiker/biker trails, this guideline will become very important.

* **Where roads are planned near to or crossing greenways, the SHA should facilitate connectors for wildlife and safe separate crossings for hikers, bicyclists, and equestrians.**

* **When it purchases land for highway projects, the State Highway Administration should consider acquiring entire parcels rather than the minimum portion needed for highway construction, where this would contribute to furthering greenways objectives.**

* **A hiker/biker trail is needed from Terrapin Beach Park to Sandy Point State Park via the Chesapeake Bay Bridge.**

* **A hiker/biker trail should be incorporated into the design and construction of the new Route 450 Severn River Bridge to connect the B & A Trail with the Annapolis Trail System.**

**Agricultural Programs**

The Maryland Land Preservation Foundation was created by the General Assembly in an effort to preserve productive agricultural and forest land. The program provides for the establishment of agricultural preservation districts and the sale of development-rights easements. The program is completely voluntary on the part of landowners and is dependent upon the cooperation of local governments.

The combination of State development policies, land preservation efforts, and a variety of local government initiatives to protect the State's farmland have merged to create an environment very favorable to a permanent and secure agricultural land base.

Acquisition of agricultural easements, when combined with other land preservation initiatives, could provide connections vital to the entire network. Agricultural easements could contribute even more effectively if priority in acquiring them were given to properties contributing to expansion of the State's greenways or to properties providing additional buffer protection for existing greenways.

A belt of agricultural land, forest land, parks, wetlands, or other natural land could create a buffer between the urban sprawl in metropolitan areas and the rural character of outlying areas. This greenbelt would create a landscape in Maryland that would enhance the quality of life; greenways within this broader belt would be important contributions to the network.

* **When an agricultural easement is acquired for a property contributing to the greenways net-work, especially along the State's water-courses, Best Management Practices should be made part of the easement.**

* **The Commission should explore opportunities and means to enhance the farmland preservation program for properties adjacent to or in the viewshed of a designated greenway.**

**Small Urban Waterfront Redevelopment Program**

The Small Urban Waterfront Development Program is a cooperative interagency effort administered by the Department of Housing and Community Development to assist waterfront communities to take advantage of development opportunities, to encourage water related tourism activities, and to improve the quality of the Chesapeake Bay.

This program encourages the controlled development of under-utilized shoreline areas. It thus offers a particularly good opportunity to coordinate with the Maryland Greenways Program on urban greenways. Also, it encourages the development of Bay-related activities, such as Bay parks, inns, and boat landings, that will be promoted through creative marketing. These activities will help accomplish the objective of encouraging public access to the Bay, which is part of the State strategy to comply with the Governor's 1987 Chesapeake Bay Agreement.

The Small Urban Waterfront Program makes it easier for small and medium sized communities to use more effectively the waterfront development funds available through various State departments and programs. Each participating agency has committed funds and staff to conduct the reviews necessary to bring projects to fruition.

**Maryland Office of Planning**

The Maryland Office of Planning is responsible for broad statewide planning efforts including the preparation of the Maryland Land Preservation and Recreation Plan. This document discusses in a general way the State component of a greenways network for Maryland. It provides a framework that local governments can build on in local land preservation and recreation plans.

Many elements of the current plan mesh directly with the recommendations of the Maryland Greenways Commission. Some of the issues identified are: safeguarding water quality of the Chesapeake Bay; preserving stream valleys, railroad rights-of-way, and public and private lands that provide access to Maryland's open space system; preserving a diversity of natural habitats; increasing opportunities for close-to-home recreation; enlarging trail systems and connecting greenways across the State; educating the public about recreation and open space opportunities; and coordinating recreation and open space issues among Federal, State, local and private groups.

* **Maryland Office of Planning should include a greenways element in guidelines for local recreation and open space plans.**

**Natural Heritage Program**

The Maryland Natural Heritage Program (MNHP) is the State's rare, threatened, and endangered species team. Formed in 1979 as a joint effort between the Maryland DNR and The Nature Conservancy, the Program is linked to sister programs in all 50 states via The Nature Conservancy's main computer in Arlington, Virginia. MNHP operates a database of rare species, unique habitats and significant natural features throughout Maryland. Through its technical and scientific staffs, the Heritage Program evaluates the potential impacts of land-use changes on rare species, conducts research and education programs, and advises in management and acquisition decisions.

**Maryland Rails-to-Trails Program**

DNR completed its Rails to Trails Study in late 1989 in response to a legislative mandate. As a result, the General Assembly

passed into law a bill requiring DNR to work with the Department of Transportation and the Office of Planning to coordinate efforts regarding acquisition of railroad corridors suitable for recreation use. The long-term value of retaining networks of abandoned railroad corridor lines is substantial in terms of providing access to public open space and linking together other community areas that are often only accessible by vehicle.

The bill states: "The General Assembly finds that in order to provide the public with access to the use, enjoyment, and appreciation of the outdoor areas of Maryland, it is declared to be public policy of this state to provide the means and procedures for establishing and expanding a network of recreational and scenic trails."

**Regulatory Programs**

Limited additions to a statewide greenways network can be provided by the State's regulatory programs, sometimes implemented by requirements imposed on new development through the planning and zoning provisions of local governments. Regulations generally apply to environmentally sensitive areas.

Although there is a widespread public perception that floodplains are protected from development, few local ordinances prohibit such development, according to a survey conducted by the Greenways Commission staff. Similarly, the State's waterway permit program, administered by the Water Resources Administration (WRA), regulates the conditions under which floodplain development may occur but does not prohibit such development.

Regulation of the floodplain under either State or local program is not done for the purpose of protecting or enhancing natural values; rather, the intent of the State law is to maintain the conveyance capacity of the floodplain and to prevent one person's encroachment from affecting another's property adversely. The purpose of the Federally mandated local regulations is to reduce flood losses, primarily to property. For this reason, most local floodplain ordinances are designed primarily to ensure that new construction in the floodplain is carried out in a manner to withstand flooding with minimal damage. Explicit requirements to consider retention of natural values in issuing permits for floodplain modification could make floodplain regulation a more important tool for greenways implementation.

Both the Maryland Department of Environment and local governments regulate stormwater management in new developments. Recent approaches to managing stormwater have seen an emphasis on the creation of wetlands and natural facilities that can become contributors to a greenways system. Even older facilities can be retrofitted, as is occurring in the Anacostia watershed in Montgomery and Prince George's Counties, and new ponds can be designed to be more in harmony with their natural surroundings.

Since 1970 WRA has regulated tidal wetlands in an effort to stem the loss of these potential components of a greenways system. The major threats to these wetlands have been bulkheading to prevent shore erosion, and dredging, which is often undertaken to expand recreational opportunities. Regulated to protect wildlife habitat and, to a lesser degree, water quality, wetlands as components of a greenways network will likely remain largely inaccessible for recreational purposes other than limited hunting.

State laws preventing mining on steep slopes and some local regulations restricting development on slopes exceeding a specified percentage grade offer some protection for hillsides or mountain ridges, which thereby remain available as wildlife corridors.

WRA regulates surface mining operations, which, particularly in the coastal

plain, affect large acreages. Stringent reclamation requirements now imposed on this activity have made mined-out lands valuable for inclusion in State and local park and wildlife management areas. Here, the intent of the regulations is simply environmental protection; the effect, however, may well be an addition to the greenways system.

One area of State regulation in which a greenways benefit might have been intended is in the Chesapeake Bay Critical Areas program. This program's limitations on development within 1000 feet of the Bay and its tidal tributaries, and restriction of almost all development within a 100-foot-wide buffer along these waters, clearly has the effect of preserving bands of green along the waterfronts. Private recreational uses, such as marinas, are among the exceptions to the ban on development in the 100-foot buffer. Public benefits of the resulting open-space reservation will be largely limited to aesthetics and improved wildlife habitat in the absence of additional steps to acquire land for public use. Ironically, perhaps, the price of waterfront land may have been forced upward by these efforts to regulate use, making public acquisition more problematic.

Regulation is inherently a negative means of adding components to a greenways network--it tells people what they can't do but has very limited capacity to gain positive contributions. In the greenways context, regulations of various types may help to ensure that natural landscapes are not developed into alternative uses; they have little capacity to assure that these landscapes are maintained for wildlife and human benefit. Public access, particularly, cannot be provided through regulatory means.

* **Regulatory agencies should report to the Greenways Commission by December 1, 1990, on how their programs can be administered or amended to further greenways objectives more effectively.**

## Federal Approaches

The State of Maryland is unusually rich in land and water resources and qualifies for a variety of Federal programs designed to help manage those resources. Also, the declining health of the Chesapeake Bay has drawn the direct involvement of special Federal programs focused on improving its condition. Following are brief descriptions of the major Federal programs that address some aspect of greenways planning, acquisition, or management in Maryland.

**U.S. Fish and Wildlife Service (FWS)**

The Chesapeake Bay Estuary Program meets responsibilities identified by the 1987 Chesapeake Bay Agreement. As a result, the regional FWS office established a separate presence in Annapolis, Maryland, to coordinate activities relating to this agreement. Major efforts include: wetlands, fish and wildlife resources, anadromous fish research and restoration, biological monitoring, resource contaminant analysis, facilities management, non-point source runoff control, public awareness, and data management.

The Regional FWS Office is important to FWS to preserve environmentally sensitive estuaries that sustain aquatic and wildlife resources. Since these concerns overlap with greenways goals, the FWS signed a Memorandum of Understanding with The Conservation Fund to work cooperatively toward the identification and protection of

greenways in the region. A survey of possible funding and FWS policies supporting greenways work has already been completed.

The Regional Office oversees the administration of several funding programs available to provide money for fisheries and wildlife acquisition, planning, and technical assistance. Dingell/Johnson, Wallop/Breaux, and Pittman/Robertson funds are distributed on a matching basis through State fish and wildlife agencies, which have some flexibility in how they are spent.

The North American Waterfowl Plan (signed by the United States and Canada in 1986) offers an opportunity to protect remaining wetlands and conserve waterfowl. The Maryland Atlantic Coast Joint Venture (ACJV) is this State's implementation committee for the plan. The group encourages public and private partnerships to protect and restore wetlands and other migratory habitat for birds, fish, and other wildlife. The ACJV has identified five focus areas in Maryland for wetlands and upland buffers: Sinepuxent and Chincoteague Bay Marshes, Blackwater and Nanticoke River Marshes, Lower Eastern Shore Marshes, Dickerson Bay, and Patuxent River Marshes. The ACJV is an obvious forum for cooperation in greenways protection when priority areas overlap.

The FWS administers a refuge system responsible for the national network of lands and water acquired for wildlife. The system in Maryland is an important component of the State's overall greenways network.

Finally, the National Wetlands Priority Conservation Plan, developed under the Emergency Wetland Resources Act of 1986, identifies wetlands that should receive priority attention for Federal Land and Water Conservation funds. The Plan can assist states in meeting the requirement under the Act that wetlands be addressed as an important recreation resource. The Act promotes cooperation among private and government entities.

**National Park Service (NPS)**

The Recreational Resource Assistance Branch encourages partnerships among Federal, State, and local governments and the private sector to:

- help identify outstanding river, trail and greenway resources and develop policies for their protection;
- provide State and local entities with technical skills needed to increase river, trail and greenway resources;
- help in the conversion of abandoned railroads to trails.

Two ongoing projects in Maryland address Chesapeake Bay access and Chesapeake Bay watershed planning. With the help of a grant from The Conservation Fund, the Recreation Resource Assistance Division is producing two greenways documents--one promoting economic values; the other, the environmental design of greenways.

NPS administers the Land and Water Conservation Fund, originally established in 1966 as a shared responsibility between Federal agencies and the States. Now the Fund is primarily divided among Federal agencies for the planning and acquisition of parks and natural resource areas. In recent years, chronic instability has led to a variety of ideas for replacing it.

**National Oceanic and Atmospheric Administration (NOAA)**

The Federal Coastal Zone Management (CZM) Act of 1970 requires States deriving Federal aid for coastal planning to address issues outlined in State plans. Section 306 Funds are apportioned nationally by a formula based on population and miles of coastal zone.

Wetland conservation and non-point pollution control, major considerations in greenways development, are shaping up as the new focus of the CZM Act as reauthorization works its way through Congress. Strong efforts are focusing on increasing funding in the national program and passing amendments that address the variety of land-use problems affecting coastal waters. The Federal CZM Program has already shown great interest in greenways for their ability to buffer important coastal waters from non-point pollution.

The Maryland CZM Program, approved in 1978, is based on the networking of existing State laws and authorities. Implementation is accomplished through memoranda of understanding between DNR (the lead agency) and other State agencies and is coordinated and monitored by the Coastal Resources Division of DNR's Tidewater Administration. The Program's definition of the coastal zone includes 16 coastal counties and Baltimore City. Major components of Maryland's plan include implementation of Chesapeake Bay Initiatives and the Chesapeake Bay Agreement.

Initial phases of Maryland's Greenways Program, including brochure-printing and the production of the "Greenways for Maryland" audio-visual show, were paid for in part by a Maryland CZM grant.

NOAA's Marine and Estuary Sanctuary Division administers the National Estuarine Research Reserve System for the United States. This program focuses on protection of natural and cultural resources, environmental education, monitoring, and research within a system of representative reserves illustrating the nation's varying coastal waters. The Maryland Chesapeake Bay Reserve System includes Monie Bay, Otter Point Creek, and Jug Bay, all in various stages of completion.

Interstate projects covering shared water bodies or estuaries receive the highest priority in funding requests. Since 1983, Virginia, Maryland, Pennsylvania, and the Susquehanna River Basin Commission have addressed the health of the Chesapeake Bay, focusing on interstate data management, economically important living resources, toxicity, and citizens' water-quality monitoring networks in each State.

**Environmental Protection Agency (EPA)**

The EPA Administrator and the director of the Regional Office have strongly endorsed greenways and have voiced support for Maryland's program.

EPA's research findings concerning the Bay's decline and its recommended remedies led to the signing of the 1983 Chesapeake Bay Agreement, which forged the first links in an enduring commitment to the restoration of the Chesapeake among Maryland, Pennsylvania, Virginia, the District of Columbia, The Chesapeake Bay Commission, and EPA. A second Agreement, signed in December 1987, goes well beyond the original compact, establishing major objectives and specific commitments for action to achieve the overall goals of the Chesapeake Bay Program. Bay Program goals address living resources, water quality, non-point pollution, population, development, public information, public access, and governance.

Both the Federal Clean Water Act and the 1987 Agreement give EPA a role in establishing a greenways network through its Chesapeake Bay Program.

EPA's national environmental programs--including Superfund, water quality programs, hazardous waste management requirements, groundwater protection, wastewater treatment regulations and air quality standards--also contribute to the protection of Maryland's greenways.

There are several opportunities for greenways coordination through EPA's

existing programs. Non-point pollution controls call for a 40% reduction by the year 2000 in nitrogen and phosphorus entering the Bay. Runoff from streets, farms and construction sites is a major focus for control. As noted above, greenways are an attractive way to address non-point pollution. EPA distributes large grants for non-point pollution control to the states. (In Maryland, funding goes largely to the Departments of Environment and Agriculture.)

Federal agency coordination and support of the State's Greenways Program could be strengthened by persuading the Living Resources Committee within the Bay Program that greenways function as critical elements for water quality and living resources in the Bay.

EPA also conducts special studies that may strengthen local greenways efforts. For example, current interest in funding a model project on the Patuxent River presents an opportunity to coordinate greenways plans.

Finally, the Executive Council of the Chesapeake Bay Program, which includes the governors of Virginia, Maryland, and Pennsylvania and the EPA Administrator is an ideal vehicle for encouraging neighboring States to initiate greenways programs.

* **A memorandum of understanding with Federal agencies participating in greenways should be developed to address mutual goals.**

* **Funds for greenways acquisition, planning, or development should be provided through existing programs.**

* **Formal agreements on existing Federal lands (military, Interior, Agriculture, etc.) should be obtained to protect corridors that will further the implementation of the greenways network.**

* **The Commission supports the transfer of surplus land at Fort Meade to U.S. Fish & Wildlife Service or the State of Maryland for integration into and enhancement of the Patuxent Greenway.**

* **Criteria to identify, protect, and manage greenways resources should be developed for all Federal lands.**

## Nonprofit Organizations and Land Trusts

Nonprofit organizations can make a very important contribution to land preservation in Maryland. Relying on philanthropic donations to fund land acquisition programs, such groups have managed to preserve thousands of acres in Maryland. Besides actually acquiring and managing important landscapes, nonprofit organizations at the national level are sources of technical expertise and organizational skill. At the local level, nonprofit groups often provide volunteer labor for greenway projects, as well as legislative and financial support.

Land trusts have been involved for more than 100 years with preservation activities throughout the country. In some cases, land trusts purchase or receive donations of fee

interest in land; in other cases, they hold easements. The greatest addition to trust-held acreage has occurred over the past 20 years as development pressure on lands has increased. Currently, Maryland has nearly 75,000 acres preserved in land trusts.

The largest land trust in the United States, The Nature Conservancy, has a long history of preserving greenways and other natural areas in Maryland. In addition, the Conservancy pioneered the concept of voluntary landowner registry programs, which could provide a model for buffers in future greenways. To date, 130 Maryland landowners are enrolled in the joint Nature Conservancy/State of Maryland natural areas registry program.

To meet the management and preservation goals of a nonprofit organization and a landowner, each easement or land trust agreement is structured individually. Because these tools rely primarily on charitable gifts from private property owners who value privacy, they are more appropriate for protecting scenic landscapes, farmland, and natural wildlife habitat than for providing public access for recreation.

The Maryland Environmental Trust (MET) is the State agency that is expressly designed to help nonprofit organizations form and maintain land trusts and hold conservation easements itself. MET, in cooperation with the Chesapeake Bay Foundation (CBF), formed the Local Land Trust Assistance Program with funds from the Coastal Zone Management Program. MET and CBF work together to encourage the formation of land trusts; they provide legal services and technical assistance for incorporation and establishment of tax-exempt status. They also provide training in land conservation techniques and organization.

* **Incentives, leadership, and training should be provided for local land trusts and conservation groups who wish to protect, manage, and maintain greenways.**

* **Partnerships with influential land conservation organizations that have large supportive memberships or can move swiftly to protect land should be created or strengthened.**

## Private Sector

Government cannot create a greenways network on its own. Not all of the land important to the network's integrity can or should be publicly acquired. Nor can all land in the greenways system be open to the public. Although most of the greenways examples cited in this report have been public areas, privately owned lands play a vital role. Developing strategies for weaving private and public properties together is one of the most challenging tasks facing the Greenways Program.

We already know that greenway connectors are critical components in the overall system; they are pathways by which people or wildlife can travel back and forth between other parts of the system. Future connectors can be rights-of-way owned or controlled by public utilities, such as electric power producers or gas pipeline companies. Other privately owned lands that could connect to established greenways include

cemeteries, agricultural buffers, private schools and college campuses, industrial park open spaces, and floodplains.

Some of these areas might be available for limited access to particular publics, such as employees in the industrial park, or residents of the neighborhood abutting the floodplain. Open spaces set aside during the subdivision process might be available for use only by residents of the subdivision. Some privately owned open spaces, like cemeteries or campuses, might be more generally available. Other greenways would be available to no one but the owner, as in the case of the farmer who maintains the stream buffer on his land. Even without human access, these greenway elements are important for wildlife habitat and, in urban areas, for visual relief from pavement and buildings.

To explore opportunities to coordinate with private interests, the Private Sector Committee initiated meetings with staff from the Urban Land Institute and the National Association of Home Builders and with various landscape architects. The full Commission is continuing to work with these groups and other private sector interest groups like the Maryland Homebuilders, that will add to the expertise available to the Commission. Forging common areas of interest and experimenting with incentives for private involvement in greenways are challenging tasks. Examples of large-scale land development and sand-and-gravel mine reclamation that have already contributed to land preservation in the region were explored. The Commission will give future attention to these models.

**Grassroots**

Early in the Commission's work, questionnaires were prepared and sent out by several of the working committees. The objectives were to identify the grassroots supporters of greenways and the level of their support, as well as to identify some priority areas for future greenways projects. The results of the surveys indicated a strong willingness to participate personally in making the greenways network a reality.

The efforts of individuals joining together are already making a positive difference without the expenditure of a large amount of public money.

***Adopt-A-Stream Program***

Adopt-A-Stream, a statewide program jointly administered by DNR's Tidewater Administration and Save Our Streams, is an example of a partnership between a State agency and a private organization. It demonstrates how stream valley greenways are already being monitored, protected, used, and enjoyed throughout Maryland.

The Adopt-A-Stream Program recognizes the value of citizen involvement in the monitoring and care of stream valleys. Citizens are often the first to notice sediment and erosion problems, illegal dumping, and other activities that threaten the health and well-being of their nearby stream valley. Additionally, local knowledge is often very reliable and helpful to State agencies when trying to determine the source and extent of violations.

The beauty of the Adopt-A-Stream Program is its flexibility. Groups of any size or affiliation may participate, and the activities and levels of commitment are as varied as the groups that join. It is designed to involve citizen organizations in the protection of their local waterway through hands-on educational, civic, and scientific activities. Activities include watershed and stream surveys, storm-drain painting, water quality assessments, and simple stream clean-ups.

Thousands of Maryland's citizens are showing their support for the Adopt-A-Stream Program. Since September 1989, over 6,000 miles of streams have been

adopted -- more than one third of Maryland's 17,000 miles of streams, 95% of which drain into the Chesapeake Bay.

Adopt-A-Stream is an excellent example of a public/private partnership that benefits natural areas and wildlife habitat, provides an opportunity for civic stewardship of resources and education, and at the same time enhances technical knowledge.

***One Million Marylanders for the Bay***

"One Million Marylanders for the Bay" initiated by Governor William Donald Schaefer, is a Statewide campaign designed to involve the citizens of Maryland in preserving the Chesapeake Bay. By educating people on how they can help clean up this precious natural resource, sometimes by making simple changes in their daily lives, the program aims to guarantee the Bay's long-term survival.

According to Governor Schaefer, "It is everyone's responsibility to clean up the Bay. If we all join this critical effort, we can make a difference in its preservation and restoration."

Marylanders can carry out simple steps outlined in "Ten Easy Ways You Can Help Clean Up The Bay." These steps include everything from water conservation to proper lawn care and sensible pest control and can easily be implemented on a regular basis in homes and workplaces.

Upon joining One Million Marylanders members receive a button and *Chesapeack*, the Governor's quarterly newsletter. To date, One Million Marylanders has distributed over a million brochures.

Many of the activities related to this campaign are helpful directly or indirectly to the greenways network plan. Future cooperation between the two projects will be helpful to both.

* **Adopt-a-Stream Program should expand to include all greenways connectors.**

* **One Million Marylanders for the Bay should implement projects that preserve and enhance the water quality along our stream valley greenways system.**

**Real Estate Development**

Private land development projects can sometimes make major contributions to the conservation of important greenway resources. A limited development centered around the Laurels in the Brandywine Valley of Pennsylvania shows how protection and profit are not mutually exclusive goals.

Where a land trust or conservancy becomes involved in a limited development, a large tract of important privately owned natural land is subdivided into large building lots (in the Brandywine Conservancy project, these averaged 30 acres); the lots are then sold to private investors, along with easements that severely restrict what can be done with them. In the case of the Brandywine, the Laurels was donated to the Conservancy by investors as a permanent nature preserve.

On a smaller scale, real estate development in Maryland already provides models for local greenway projects. For example, at Solomon's Landing in Calvert County, natural area conservation and trail development guided the site development process. In the Sandy Oaks project in Anne Arundel County, State requirements for wetlands and endangered species protection and mandated local open-space needs led to well planned set-asides within residential subdivisions. In the future, linkage of subdivision open spaces with one another and with established greenways can make the network available at the neighborhood level.

# Local Action: The American Chestnut Land Trust

The residents of Scientist's Cliffs, a small residential community on the Chesapeake Bay, had watched with increasing unease as Calvert County grew and developed at a fevered pitch. Unparalleled growth and rocketing real estate values in nearby Washington, D.C., had pushed that city's commuting belt out to include this rural peninsula, and a development boom was on. When a 450-acre tract adjacent to Scientist's Cliffs went on the market late in 1986, residents decided to take direct action. Forming a non-profit corporation, the community solicited donations for "shares" in the property at the rate of $4000 each. Through careful planning and a highly successful fund-raising campaign, the American Chestnut Land Trust (ACLT), named after one of the few American Chestnuts that had survived the blight and still lived on the property, was able to make a down payment of $400,000 in 1988. Using an innovative county land preservation program, the ACLT then sold off the development rights to the property, which went into the county's development rights bank. The advantage of such a Transfer of Development Rights (TDR) program is that landowners can perpetuate their land as open space while recouping the value of the development rights. The TDR's are then sold to developers who want to increase the density of their projects above that allowed by existing zoning. The net effect of this process is to cluster development, maximizing open space and concentrating new homes into centralized villages rather than large-lot suburban sprawl.

After its unparalleled success with its first acquisition, the ACLT continued to raise funds and acquire additional acres, forming a greenbelt around the community, and it plans to continue protection efforts. The lands now border tidal waters to the north of Scientist's Cliffs and may soon border the Chesapeake on the south.

When the ACLT first bought the preserve, it knew that the property was special and beautiful and that the American Chestnut and old woods on the site were worth protecting. But as the property was studied further in cooperation with biologists from Maryland's Department of Natural Resources, a number of additional values were identified, including seven threatened and endangered species, one of which occurs nowhere else in the State. The ACLT protects one of the major tributaries for Parker Creek, a unique natural area.

The American Chestnut Land Trust's success has spawned a growing number of similar ventures throughout Maryland and has been recognized by National Geographic Magazine and other major publications. ACLT lands are maintained by a dedicated force of volunteers and are open to the public.

Prince George's County recognizes the importance of these linkages in its upcoming work plan. Smaller local governments may need assistance to realize this potential.

**Agriculture**

The Committee on Water Resources, Fish, Wildlife, Conservation and Agriculture explored the issues surrounding greenways and greenway buffers on agricultural lands. While there is general consensus that agricultural areas are among the State's most important, if "unofficial," open spaces, preservation of agriculture as a viable part of the economy, and of agricultural lands as components of the greenways network, remains problematic. Issues of public access, interference with farm operations, possible environmental damage, and liability were identified as problem areas during the Committee's initial review. Better integration of farmland preservation efforts with greenways interests is an area requiring additional exploration.

**Sand and Gravel Reclamation**

Reclamation of lands that have been mined for sand and gravel and that must be reclaimed under State surface-mining regulations provide an important opportunity for private sector involvement.

A representative of Genstar Stone Products, a company currently working with DNR to create the Days Cove section of Gunpowder Falls State Park, presented its reclamation plan to the Commission. Benefits to the State include expedited, low-cost park development. Genstar, on the other hand, is proceeding with extraction in a timely fashion, while improving its public image, even gaining national recognition.

This success story should be a model for other resource extraction companies, particularly the sand-and-gravel industry, which in Maryland operates largely in floodplains, where the resource is found. The companies are often left with ponds, lakes, wetlands, and floodplain, which are generally unsuitable for commercial, industrial or residential redevelopment. Park use of the mined-out river corridors has great potential for linking with river greenways.

* **As incentives to private groups to open their lands to recreational or wildlife management uses, government should consider providing liability, security, and public safety coverage and technical expertise in trail-building, maintenance, and wildlife management.**

* **The Commission should explore incentives to encourage wildlife enhancement on agricultural lands.**

* **The State should provide recognition to those community groups or private landowners who dedicate their land to enhance the greenways network.**

* **Alliances with private corporations should be set up to protect greenway corridors through land reclamation on mining sites.**

* **Business and industry should be encouraged to dedicate lands for greenways.**

## Utilities

Land and water corridors, such as stream valleys and ridgelines, are the skeletal frame of the greenways system. Often overlooked are linear rights-of-way for oil, gas, electric, and water transmission.

It is no accident that utility corridors criss-cross population centers and serve those areas where people spend most of their time. Relief from street traffic makes trails on utility corridors immensely popular, and many localities have already worked out use agreements with utilities to allow access for recreation, trail use, and gardening. Trail maintenance agreements are varied, and tailored to suit individual circumstances. Negotiations with utilities identify parties responsible for signs, maintenance, and security. The agreements also specify the utility's needs for line maintenance and repair, permitted herbicide use, and even closure of the trail if necessary to fulfill the utility's obligation to its customers.

Utilities are already a major provider of wildlife greenways. Through routine utility maintenance, a great deal of habitat is provided at no cost to the State. Utility rights-of-way, particularly in wooded areas, create corridors of vegetation--short, scrubby habitat rich in wildlife food, cover, and habitat diversity valuable for promoting many types of wildlife. Even in agricultural areas, shrubby vegetation at the base of powerline poles and towers provides an island effect which attracts wildlife. In the East, it is very common for white-tail deer, cottontail rabbits, ruffed grouse and song bird populations to be attracted to utility rights-of-way.

There are several issues important to the utility industry, which must be explored and addressed if we are to understand and attract utility partners in the greenways system.

### Ownership

First, utilities may or may not own the land upon which their lines and facilities are placed. Limited easements may pose legal and operational restrictions to greenway use of the land. Even with fee-simple ownership, restrictions on surface use may remain. Regardless of ownership, regulatory requirements may restrict whether utilities can provide additional services to the public. Disincentives may also come in the form of opposition from adjacent landowners, who may have problems with recreational trail use.

On the positive side, public support for greenway connections may help utilities secure new rights-of-way and local transmission centers, making an attractive partnership for both sides. Also, while most utility lands are narrow corridors of specified width, some companies own large tracts throughout the State that have greenways values of their own.

### Security

One of the barriers preventing utilities from welcoming the public onto their corridors is undesirable activity invited by open gates--garbage dumping, vandalism, and trail-biking. State and local policing of opened trails on utility land would make the prospective greenway links more attractive to utility cooperators. In areas where policing is not feasible, greenway corridors could remain managed for wildlife habitat without public access. Formal and official designation as greenways could also deter vandalism and promote respectful use of the rights-of-way.

### Liability

Liability concerns are perhaps the major barrier to public access on utility land. Liability relief provided by the State or local

# Greenways as Good Business: Sandy Oaks

Mandarin Construction Company, a homebuilder in northern Anne Arundel County, had cleared its zoning and permit hurdles for the Sandy Oaks Subdivision when one of its wetland delineation consultants made a highly unusual discovery. Hidden within the wet stream corridor, which bisected the project, was a large population of one of the rarest flowers in the world. Growing up to three feet tall during its short blooming period, the swamp pink lily, with its oval cluster of pink flowers and blue anthers, looked like The Flower from Outer Space, and there was no mistaking its identity. Swamp pink had declined to a few widely dispersed populations on the East Coast and was listed as endangered in Maryland and threatened on the Federal list.

Project managers sat down with county planners and biologists from the Maryland Natural Heritage Program, the State's endangered species team, to work out a solution to the dilemma. Since the project was already approved under the subdivision process, and since State and Federal laws protecting plants were less than stringent on this kind of project, the various parties decided to innovate.

By concentrating the subdivision's open space around the stream corridor, additional buffer was afforded the swamp pink. Open space design was arranged so that passive-use areas were close to the streambed and active-use areas were placed outside, but adjacent to, the passive buffer. The unique character of the wetlands along the stream corridor was due in large part to the unusual hydrology of the area. A sandy ridge borders the stream and acts as a small aquifer, catching and storing rainfall. This rainwater is slowly discharged into the stream corridor, forming a seepage wetland. To preserve the existing hydrology, the developer radically altered his stormwater control plan, replacing two planned ponds with a dozen stormwater recharge units. The recharge units clean runoff from developed areas and reinject it into the ground so that it can continue to the seeps.

With buffers established and hydrology protected, the planning team set about the problem of public access. Building a huge fence around the area might keep most people out, but sooner or later holes would develop. On the other hand, uncontrolled access could lead to the trampling and picking of swamp pink. Neither of these options would have provided any educational benefit to the community. So it was decided that access to the stream valley would be encouraged and controlled by the establishment of a formal nature trail, complete with boardwalks, bridges, and interpretive signs. The trail winds through most of the stream area, although it bypasses an isolated swamp pink population that will remain undisclosed to the public. The developer gave up a building lot where the trail begins, to allow for parking and a kiosk. The nature trail will be managed by the homeowner's association and much of the success of this project will depend upon a few dedicated homeowners taking care of the site.

Sandy Oaks is an ongoing project, and only time will tell whether it succeeds. With luck, the people who buy homes there will recognize the natural, recreational, and quality-of-life values of their greenway and will nurture and protect it and its unusual resident flower. They will all certainly be aware of it, from the first time they see the picture of swamp pink on the entrance sign. And whether they live on Pink Lily Lane or Nature Trail Drive, they will always own their own piece of nature close to their back yard.

governments would be a major incentive to opening corridors to the public.

Maryland, like many other states, does have a recreation liability statute that provides coverage for private landowners offering their land for public use. At least one utility company in Maryland considers this coverage adequate for public use of its land.

**Trails**

Potential for trail development on utility lands lies largely untapped. Utility corridors provide an opportunity for counties and the state to expand recreation and wildlife habitat potential through cooperation with this segment of the private sector.

* **The Commission should work with utility representatives and other quasi-public agencies to formalize an arrangement for planning, evaluating and developing rights-of-way for additional greenway connectors. The Public Service Commission should be included when reviewing projects that could enhance the greenways network.**

## Public Outreach

**Greenways cannot be successful without the public's understanding and participation.**

During numerous meetings in the spring of 1990 with groups and individuals, members of the Greenways Commission and staff found wide interest and support for establishing a greenways network. It also found widespread recognition of the need for involvement and cooperation from all levels of government and various private interests in order to create a comprehensive system.

The uniqueness that each county brings to the proposed greenways network must be acknowledged and used to make the system better.

Improved communication will be a major requirement to implement a program. Such communication is two-way, including both letting the general public and other actors know what is being done and what is needed from them and hearing from affected publics as to their wants and needs. Maintaining necessary support for greenways will depend on the success of continuing communications.

Concepts such as the importance and value of greenways and how they serve both resource conservation and outdoor recreation, as described in this report, need wide dissemination. Gaining financial support for greenways that serve wildlife or water quality goals but are closed to human access, will require particular outreach efforts. Implementing greenways may be possible at the price of changing common behaviors, rather than by expending dollars; this, too, requires understanding and cooperation from many interests and individuals.

Outreach efforts have already begun. A slide show (and a video tape version of it) has been developed and shown and is available for distribution. Surveys were prepared and distributed, and their results have been used for this report. Presentations

were given to interested groups, and dialogue has opened between both current and potential actors from the private sector, such as the Association of Home Builders and a number of the State's utilities.

One tool that could be used to enhance support for the program is the creation of a coalition of supportive organizations and businesses. Workshops could be held each year focusing on particular greenways benefits, and awards given to organizations or individuals doing the most to help create greenways. Other ways to recognize support for and contributions to the greenways network could include: plaques; proclamations; patches saying, "I walked the--greenway"; a discount card for use in greenways throughout the State; tree planting ceremonies; and leadership awards given by service organizations.

Roundtables for special interest groups offer a means for regular information exchanges. Displays and workshop sessions at professional conferences and association meetings offer other opportunities. Additional private interest surveys, such as one being developed for the agricultural community, can help provide input on issues affecting particular groups' ability to participate effectively in the program.

While efforts directed toward identified interests have begun, little has been done to reach less organized and local interests through the mass media. Displays and handout materials can be prepared for major events, such as fairs and festivals. Reaching broader publics can also be accomplished through information packets sent to community organizations for inclusion in their own materials. A copy of the video taped slide show can be distributed to local groups as a supplement to meetings. Grassroots operations, such as Adopt-a-Stream, can be encouraged to emphasize completion of important greenways components.

Providing technical assistance to community groups and organizations like Boy Scouts and school PTAs is another means of public outreach that is already part of some agency programs. If expanded in those agencies, and initiated in others, this activity would support greenways development. Establishment of a clearinghouse to match potential projects with funding sources, as well as technical and volunteer support, is another vital component of overall program development.

## Summary

The preceding pages indicate the broad spectrum of programs, tools, and actors that could implement greenways. A mechanism for integrating these programs and players and insuring that they are coordinated is missing. A comment heard on several occasions during the Commission's meetings with interest groups was that one planning/implementing agency does not know what another is doing--local governments are ignorant of State plans and both are ignorant of Federal plans and activities. Even within each level of government, agency personnel are often ignorant of related activities being carried out in sister agencies. All actors could participate more effectively, our respondents felt, if better communication were available, leading to better coordination.

Existing regional bodies, like the Baltimore Regional Council of Governments, could provide forums for coordinating the multiple efforts related to greenways in their areas. Another mechanism would be development of a state greenways plan, incorporating local greenways plans. Such plans might be made conditions for participation in Program Open Space.

Where plans are required as elements of other State programs, such as flood management grants, greenways considerations could be required. Simply designating a greenways coordinator within each agency of state government that has greenway-related responsibilities, and similar coordinators in each county, would go a considerable way toward achieving improved cooperation.

Probably the most significant impediment to development of a unified State greenways program is the lack of standard or even compatible mapping procedures and products from agency to agency. The Commission found it is not possible to consolidate mapped information in a timely fashion because of variations in map scale and resolution. Automated mapping procedures, which could help agencies share mapped information, are lacking. Where geographic information systems are in place, they may not be compatible with one another.

While overcoming the mapping problem will be expensive and time-consuming, surmounting other obstacles may be less costly. Areas needing attention include the lack of any kind of greenways mission statement in authorizing legislation and constraints on personnel time and availability. Clear designation of leadership responsibility will help coordination.

* **A geographic information system compatible with existing Federal, State and local systems should be instituted to map the existing and proposed greenways network and to make maps and data accessible to local planning and parks agencies.**

* **The Department of Natural Resources should act as a clearinghouse for informational materials and case studies on greenways.**

# ACTION AGENDA

**The Commission finds that a complex demonstration project that will incorporate as many opportunities and raise as many issues as possible is a necessary next step in implementing a statewide Greenways Program. The Patapsco Greenway embodies the full range of issues and opportunities likely to arise in such a program.**

The next phase of work on greenways will be multi-faceted. Several major efforts should proceed concurrently: continuation of statewide outreach; creation of a long-range workplan that will include a more defined study of administrative and legislative strategies for greenways implementation; development of a State model project (Patapsco); and development of a national model project (Potomac).

Statewide outreach will entail a public dialogue aimed at keeping alive the enthusiastic support that the greenways concept has received to date. Implementing many of the approaches outlined in the "Public Outreach" section of this document must be considered a priority. The Governor could add to the visibility of the project by highlighting various local greenways projects on his tours throughout Maryland and giving awards to individuals, businesses, and other organizations for contributing in some way to a greenway.

The long-range work plan for the completion of the greenways network in Maryland should involve an immediate effort to integrate various local and State mapping systems into a central database. Maps should show existing open space, whether public or private, agricultural easements, scenic easements, abandoned rail corridors, and utility rights-of-way. Mapped information should be shared with all jurisdictions. A phasing proposal should be designed that will help organize what must be accomplished and estimate the time needed to complete each element. It will be very important to study administrative and legislative methods to improve greenways implementation on a coordinated, statewide basis.

The Commission will work on a State model greenway, the Patapsco. This choice was made for many reasons. The Patapsco is very complex, containing an example of almost every imaginable issue and opportunity that could occur in a greenway. It can even include a greenways connector that would join the Patapsco to the Patuxent River. The project is centrally located in the State and provides a large population the chance to realize the close-to-home benefits of a greenway. The land involved is largely in public ownership, yet has potential for public-private partnerships as well as interjurisdictional cooperation among four counties and Baltimore City. The Commission feels that implementation of the Patapsco Greenway can have visible and dramatic impacts. The first step will be to refine the existing plans for Patapsco and develop strategies that may show some on-the-ground results by the end of the year. The Patapsco model is significant for the entire State because it will demonstrate the processes of greenway-creation. The great variety of skilled and dedicated professionals involved will provide a needed case history for future greenway activities.

The Commission will also take the lead in identifying and developing a national model for greenways. The Potomac River has long been recognized as the nation's river. The C&O Canal already runs along the river from the nation's capital to Cumberland. The river itself, along our border with Virginia and West Virginia, lies totally within our state. Points of interest in three separate states, as well as Washington, D. C., are many and varied, including historic sites,

recreation areas, and natural areas. In The Report of the President's Commission on Americans Outdoors, "A Hiker's Greenway Odyssey" exists mainly within this corridor.

The designation of the Potomac River corridor as a national greenway is a prime example of how the network can radiate into adjacent States. All three States participate, as do County and local governments, nonprofit groups, and the Federal government (NPS, FWS, U.S. Army Corps of Engineers, Department of Defense). This diversity of government entities and interest groups within three States and the District of Columbia, all working toward a national model, will create an exceptional project.

The Commission feels strongly that this upcoming phase of work will be extremely important and time-intensive. The multi-pronged approach outlined above will speed our progress toward the long term goal of completing the Greenways Network for Maryland.

# APPENDIX

## The Commission's Work

Governor William Donald Schaefer announced the appointment of a Maryland Greenways Commission on March 5, 1990, at the Arlington Echo Outdoor Education Center in Anne Arundel County. The announcement was the culmination of months of work within the Maryland Department of Natural Resources (DNR) focused on the potential for a greenways network in the State, including a six-month contract, funded by a NOAA grant, with The Conservation Fund to assist in assessing Maryland's greenway options. As part of this study, a series of workshops was held with a number of interest groups, both private and public, to help develop ideas and strategies for greenways. The formation of the Commission was the outgrowth of these early efforts.

The Governor appointed The Honorable O. James Lighthizer, County Executive for Anne Arundel County, Chairman of the Commission, with Mr. William C. Baker, President of the Chesapeake Bay Foundation, as Vice-Chairman. The Commission has 21 members representing the business and agriculture communities, conservation groups, recreation interests, and government.

To meet a tight schedule, for reporting its findings and recommendations, the Governor advised the Commissioners that it would be necessary to invest a great deal of their time, energy, and professional skills. The Commission was organized into four working committees: Water Resources, Fish, Wildlife, Conservation, and Agriculture - chaired by James Gracie; Recreation, Parks, Cultural Resources, Grassroots, and Environmental Education - chaired by Joseph J. McCann; Private Sector - chaired by Hans F. Mayer; and Government and Quasi-Public Agencies - chaired by Torrey C. Brown.

Each committee gathered information through meetings, research, questionnaires, phone calls, and presentations to the full Commission. Some of the groups that contributed were the Baltimore Association of Landscape Architects, major utility companies, Baltimore Region Planning and Zoning and Recreation and Parks representatives, Urban Land Institute, Hudson Valley Greenway Council, and National Association of Homebuilders.

The full Commission met bi-weekly from March 5 through May, while the Committees met frequently in the intervals. Greenways staff also made presentations and showed the video/slide show to a number of organizations, including: Department of Economic and Employment Development's Marketing Roundtable, Baltimore Regional Council of Governments' Open Space Committee, State Planning Commission, National Rails-to-Trails Workshop, American Society of Civil Engineers Symposium, Maryland Recreation and Parks Association Annual Conference, and National Geographic Board of Trustees.

## Meetings of Greenways Commission and its Committees

(*Indicates Minutes are on file at Commission office.)

**Commission Meetings**

March 5*
March 19*
April 2*
April 16*
April 30*
May 4
May 16

**Committee on Water Resources, Fish, Wildlife, Conservation and Agriculture**

March 19*
April 2*
April 16*

**Committee on Recreation, Parks, Cultural Resources, Grassroots and Environmental Education**

March 15*
March 30*
April 5*

**Committee on the Private Sector**

March 16*
April 5 - with Baltimore Association of Landscape Architects
April 11* - with Urban Land Institute
April 19 - with National Association of Home Builders

**Committee on Government and Quasi-Public Agencies**

March 15*
April 4* - with Utility representatives
April 5* - with Baltimore area local government representatives
April 17*

## Commission File Material Used In Report

Responses to and Summary of Survey conducted by Committee for Recreation, Parks, Cultural Resources, Grassroots and Environmental Education.

Responses to and Summary of Survey conducted by Committee for Water Resources, Fish, Wildlife, Conservation and Agriculture.

Responses to Staff Floodplain Management Questionnaire.

Proposals from members of Baltimore Association of Landscape Architects.

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The following is a list of the many individuals who helped the Commission to complete its work:

Cindy Abbott ☺ Ronald Adkins ☺ Robert Agee ☺ Jeanette Anders ☺ Jack Anderson ☺ Robert Arciprete ☺ Bill Ashe ☺ Jay Baldwin ☺ Norm Bartlett ☺ Debra Bassert ☺ Mrs. Bauer ☺ Eric Bauman ☺ Bette Baureis ☺ Susan Beck-Brown ☺ Peter Becker ☺ Robert Beckett ☺ Norman Berg ☺ Yvon Bergevin ☺ Thomas Beyard ☺ Frank Biba ☺ Thomas Black ☺ Ruth Blackburn ☺ James Bleecker ☺ Dan'l Boone ☺ David Bourdon ☺ Andres Bowden ☺ Joan Bowling ☺ Earl Bradley ☺ Chris Brown ☺ Steve Bunker ☺ Steven Burkett ☺ David Burwell ☺ Sally Cairns ☺ Elizabeth Calia ☺ Paul Campbell ☺ Philip Caroom ☺ Charlotte Cathell ☺ Robert Chance ☺ Joseph Cheung ☺ Bob Christopher ☺ Andy Clarke ☺ Willard Cleavenger ☺ Thomas Clime ☺ Shawn Clotworthy ☺ Marlene Conoway ☺ Mary Corderman ☺ John Crim ☺ Alan Cruikshank ☺ Ned Cueman ☺ Terry Cully ☺ Lynn Davidson ☺ Gary Davis ☺ Flannery Davis ☺ Robert Davis ☺ Deanna Dawson ☺ Grant DeHart ☺ Steven Dodd ☺ Mary Dolan ☺ Teresa Dowd ☺ Carol Dubel ☺ Bob Dulli ☺ Ajax Eastman ☺ Mark Edwards ☺ Joseph Elbrich ☺ Ted Erickson ☺ Michael Erwin ☺ Ilia Fehrer ☺ Dwight Fielder ☺ Gail Fields ☺ Karen Firehock ☺ Thomas Fisher ☺ A.J. Fletcher ☺ Daniel Folk ☺ George Forlifer ☺ Sisi Foster ☺ Tom Franklin ☺ Scott Franzak ☺ Jim Fremont ☺ Gorman Fry ☺ Larry Fykes ☺ Wilbur Garrett ☺ Don Gartman ☺ John Gates ☺ Bill Gates ☺ Deborah Geisenkotter ☺ Frank Gerred ☺ Dixon Gibbs ☺ John Gill ☺ Catherine Gilliam ☺ Nancy Gillio ☺ Carleton Gooden ☺ Amelia Grady ☺ August Grat ☺ Ernest Gregg Jr. ☺ John Griffin ☺ Gary Griffith ☺ Bernie Grove ☺ Noel Grove ☺ Guy Hager ☺ Donald Halligan ☺ Bruce Hancock ☺ Robert Harrington ☺ Kenneth Hart ☺ Harold Hartman ☺ James Haught ☺ Keith Hay ☺ Johnston Hegeman ☺ Robert Hetcher ☺ Russell Heyde ☺ Al Hickman ☺ Sandy Hillyer ☺ David Holden ☺ Andrea Holdredge ☺ Jan Hollmann ☺ Bruce Holmgren ☺ Clark Holscher ☺ Jeff Horan ☺ Margaret Hornbaker ☺ Douglas Horne ☺ Jackie Horney ☺ Benedict Hren ☺ Aileen Hughes ☺ Bill Hughey ☺ Michael Humphries ☺ Anne Hurn ☺ William Hunter ☺ Becky Hutchinson ☺ Charles Iliff ☺ Nancy Ingram ☺ Julia Irons ☺ Frank Jaklitsch ☺ William James ☺ Mark Jeweler ☺ Paula Johnson ☺ Judy Johnson ☺ Ray Johnson ☺ Offutt Johnson ☺ Eric Johnston ☺ Greene Jones ☺ Thomas Jordan ☺ John Joyce ☺ Jack Keene ☺ K.C. Keith ☺ William Kelly ☺ Bill Kennedy ☺ Glen Kinser ☺ Stefan Klosowski ☺ Jayson Knott ☺ Stefan Koczerzuk ☺ John Kowalski ☺ Stan Kozenewski ☺ Elizabeth Krempasky ☺ Edward Kroeger ☺ Rob Kyle ☺ Len Larese-Casanova ☺ Edwin Lawless ☺ Bob Lee ☺ Rochelle Levitt ☺ Tom Lewis ☺ Jake Lima ☺ Ethel Locks ☺ Brad Lushbaugh ☺ Bunny Lynn ☺ Jacquelyn Magness ☺ John Maple ☺ Nick Maravell ☺ Lisa Marquart ☺ Ed Mason ☺ Paul Massicott ☺ George Maurer ☺ Kevin McBride ☺ Patrick McDougall ☺ James McFadden ☺ Barnabas McHenry ☺ Dick McIntyre ☺ Marsha McLaughlin ☺ Barbara McLeod ☺ Dan McLeod ☺ Helen McMahon ☺ George McManus ☺ Patrick Meckley ☺ Paul Meyer ☺ Mark Middleton ☺ Howard Miller ☺ Joseph Molinaro ☺ Stuart Morris ☺ Ernie Moseby ☺ Doreen Mullen ☺

Gene Neff ☺ Suzanne Neimeyer ☺ John Nelson ☺ Michael Nelson ☺ Vivian Newman ☺ Rob Northrop ☺ Crystal Omokaro ☺ Jeffrey Opel ☺ Gail Owings ☺ Jim Paddock ☺ Richard Pais ☺ David Pardoe ☺ Michelle Park ☺ James Parsons ☺ Michael Pawlukiewicz ☺ Elaine Peiffer ☺ Geneva Perry ☺ Paul Phelps ☺ Allen Pitts ☺ Irene Poulson ☺ Robert Prenger ☺ Paul Prodonovitch ☺ David Pyles ☺ Jennings Quillin ☺ Alan Quimby ☺ Mark Raals ☺ Diane Ramsey ☺ Denise Rankin ☺ Susan Reinhart ☺ James Richardson ☺ Derek Richerson ☺ Deidra Richie ☺ Chandler Robbins ☺ Lynda Rogers ☺ Debbie Romero ☺ Eric Ruby ☺ Quentin Rudolph ☺ Robert Ryan ☺ David Sampson ☺ Ted Sanderson ☺ Benjamin Sansom ☺ Darlene Schepling ☺ Nancy Schmidt ☺ Tanya Schmieler ☺ James Schumacher ☺ Rai Sharma ☺ Michael Shibley ☺ Bill Silverman ☺ Barbara Snider ☺ Daniel Snyder ☺ F. Spellman ☺ Darnell Spence ☺ Mark Spencer ☺ Frank Spink ☺ Charles Spooner ☺ Lynn Sprague ☺ Randy Stadler ☺ David Stahl ☺ Wayne Stallings ☺ Rodney Stark ☺ Jean Stewart ☺ Jerry Stokes ☺ David Stotler ☺ Ed Stuebing ☺ Marti Sullivan ☺ Lee Summerville ☺ Ann Swanson ☺ Diane Szeckley ☺ Barbara Taylor ☺ Gary Taylor ☺ Sarah Taylor ☺ Helene Tenner ☺ Tamara Thiel ☺ Joanie Thomasson ☺ Ed Thompson ☺ Edith Thompson ☺ George Thompson ☺ Michael Thompson ☺ Josephine Thoms ☺ Greydon Tolson ☺ Chari Towne ☺ Guy Turenne ☺ Mrs. Hal Tray ☺ Maggie Vinciguerra Thomas Vint ☺ A.L. Waldron ☺ Donald Walker ☺ Ben Wallace ☺ Ginny Walsh ☺ Joan Ward ☺ Charles Ware ☺ Morris Warren ☺ Michael Watson ☺ John Watson ☺ Mark Weber ☺ Henry Wells ☺ Bernard Wentker ☺ Charles Wheeler ☺ Juanita White ☺ Ed Wibner ☺ Malcolm Wilkerson ☺ John Wilson ☺ John Wolf ☺ Wendy Wydra ☺ James Young ☺ Robert Ziehm ☺ Scott Zimmerman ☺ Craig Zinter ☺

Our thanks are also expressed to those who may have inadvertently been omitted.